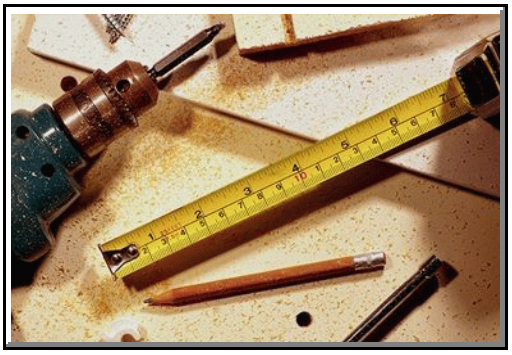
Program Curriculum Recommendations

Technology Education programs strive to meet the needs of the communities and students they serve. The content of the program curriculum should reflect the needs of not only the local population but technology industries in general. The curriculum shall consist of a core of approved courses which are systematically sequenced to build on previously learned competencies, and should reflect advancements in technology and approved practices throughout technology industries.

- **Recommendation:** Program enrollment should fall within the guidelines of existing program facility standards, not exceeding a 24 to 1 student to teacher ratio, per class.

  Action: Develop suggested student enrollment loads for the program facilities.



- **Recommendation:** Program curriculum shall prepare students with multiple technology competencies in a minimum of two of the following areas:
  Communication Technology, Construction Technology, Manufacturing Technology, Power, Energy and Transportation, Emerging Technologies, Fundamentals of Technology Education.

Action: Develop recommended sequences for students to follow which includes a capstone course.

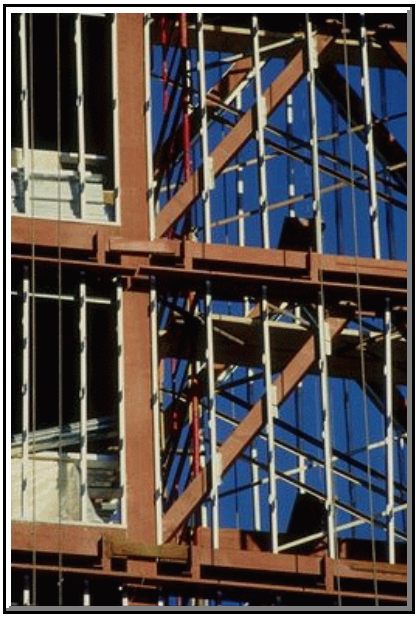
Recommendation: Career information, exploration, and planning should be encouraged.

Action: Inform students about career opportunities available in various technology industries as a part of the curriculum.

Recommendation: Human relations, social skills, leadership development, and interpersonal communication skills should have considerable emphasis in a Technology Education curriculum.

Action: These skills and competencies shall be introduced and reinforced throughout the entire curriculum of a complete program.

Recommendation: Technology Education programs curriculum standards shall map to adopted state math, science, and reading achievement standards.



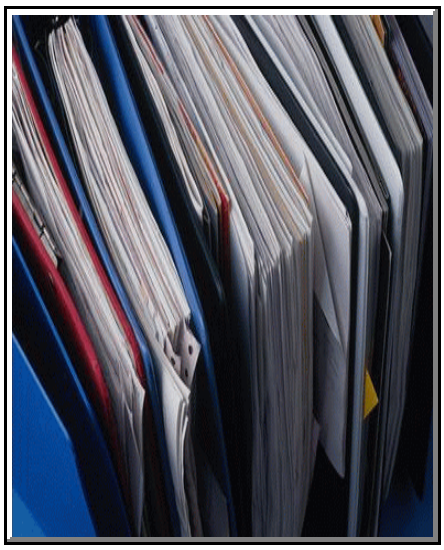
Action: Teachers of Technology Education programs should develop curriculum based on more than one of the following areas of instruction: *nature of technology, technology and society, technological systems, design, the designed world, and abilities for a technological world*

Recommendation: In order to meet the needs of diverse students, strategies should be taken to enable all students to be successful.

Action: Explore distance learning, school to work and career pathway opportunities.

Curriculum Development and Assessment

Model for Technology Education Curriculum Assessment
(Adapted from "Model for Curriculum Assessment And Standard Implementation" Ethan B. Lipton & Michael A. De Miranda)



Definitions:
Curriculum – The subject matter that teachers and students cover in their studies, methods, structure, organization balance and presentation of content.
Curriculum Development – The process of planned development of curriculum, pedagogy, instruction and presentation models.
Curriculum Assessment – The process of analyzing the content outcomes of instruction.

Why have a Model for Curriculum Assessment?
Having a model for curriculum development helps document the relationship between technology education and academic content. By using the model your instructors will be able to show that they are teaching powerful material that is in line with state standards. Moreover, they will be able to make the statement "we teach this technology content which is already academic.."

The Plan:
The plan for Technology Education Standards and Curriculum in the State of Idaho includes three components:

1. Idaho State Academic Achievement Standards
2. Idaho Technology Education Content Standards
3. Local Curriculum Development

The relationship between the first two components is critical for the success of the third, locally developed Technology Education curriculum. The goal is for Districts to create a curriculum which simultaneously:

- reflects individual community local needs and values;
- meets or exceeds Idaho Technology Education Standards, and
- provides an avenue for students to meet various Idaho Academic Achievement Standards in mathematics, science and language arts.

To accomplish this three way relationship linkages connecting the components must be created. The first step, creation of the link between the Achievement Standard component and Technology Education Standard component is presently underway. Idaho is one of a handful of states who were chosen for a pilot study in which both sets of standards will be mapped using a taxonomy. Once the link is completed step two can proceed. In step two, the new curriculum assessment model will act as the link between the

Technology Education Standards and locally developed curriculum The last and final step consists of the delivery, evaluation and revision of the newly developed local curriculum.

The Curriculum Development Process Model:

Process One (Getting Started)

Step One – Start by choosing one course within one area to assess**.** For example, you may wish to assess Communication Systems I under the area Communications Technology or Power, Energy and Transportation Systems II under the PET area
Step Two **–** Create an outline of the course
Step Three – Match the outline of the course to the Idaho Technology Education Standards
Step Four – Compare outline to all standards (this should show where deficiencies or over emphasis in content exist)
Step Five – Proceed to Process Two

Process Two (An Action Plan for Revisions)

Step One – Record titles of selected standards for which changes need to be made in curriculum
Step Two – Record the action to be taken to make the desired change
Step Three – Schedule implementation of the change

Process Three (A Business Plan for the Program)

Step One– Identify equipment, supplies and services which are needed for implementation
Step Two – Determine the cost of the items needed
Step Three – Provide a justification for the proposed expenditure

The results of implementation of the Curriculum Assessment Model should include:

- clarification of the goals and objectives of your program
- creation of an improvement implementation strategy
- strengthening of the curriculum
- ability to show how technology education integrates with academic basics
- creation of a balance between what are required through the standards and content that is currently being delivered in Technology Education programs

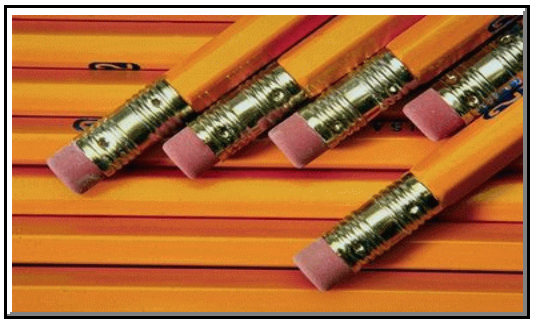
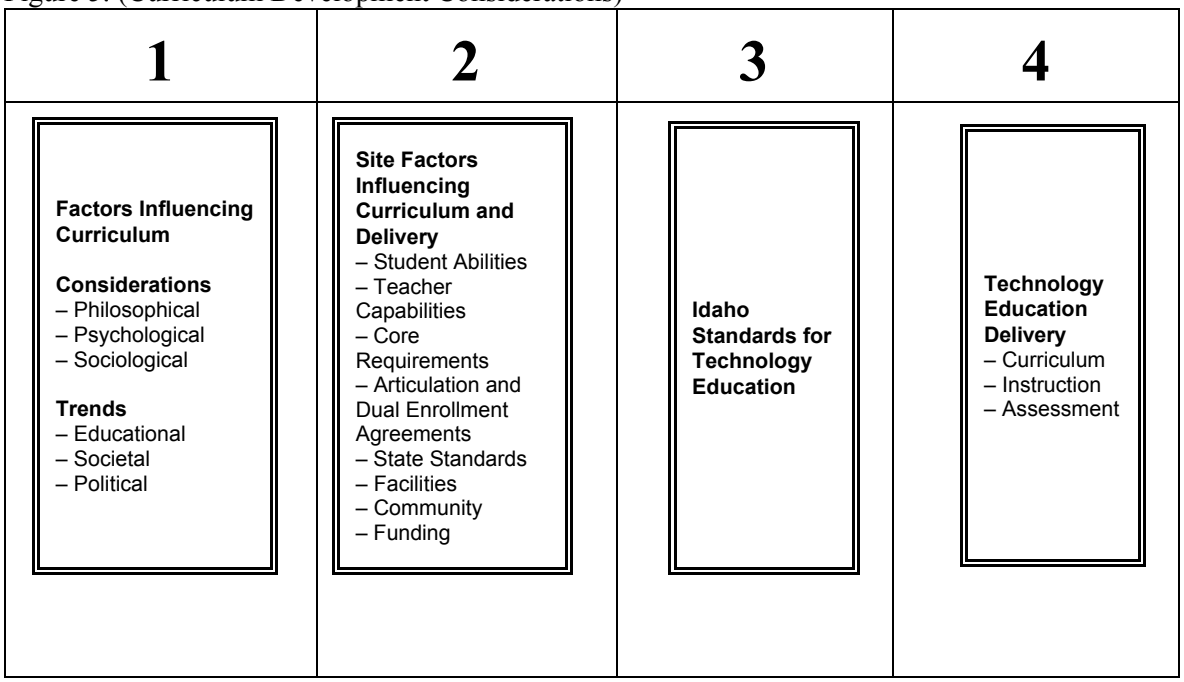


Figure 5. (Curriculum Development Considerations)



In most districts the responsibility of developing or assessing curriculum lies on a team of content experts appointed by either a curriculum coordinator or superintendent. There are many items for the teams consideration which affect the content and flavor of curriculum. For example, national trends, local priorities, state and district assessments and even local personnel affect decisions concerning the focus and delivery of content. In addition development and delivery of curriculum is also affected by student abilities, teacher capabilities, core requirements, and articulation with postsecondary institutions (see Figure 5). Understanding that development and assessment of curriculum is a local control issue, the Division strongly recommends that any curriculum content developed or purchased meet the standards adopted by the Technology 2001 committee. Compliance will ensure a minimum standard of program excellence across the state.

Curriculum Guidelines

The content in this portion of the Technology 2001 Report was created and published in 1995. Presently a curriculum committee is being convened to update the document. The release of the revised Curriculum Guide is scheduled for early 2002, and will include mapping of the content objectives to the International Technology Education Association (ITEA) and the Idaho Achievement Standards. Also included in the release are additional content areas such as Networking and Related Technologies, Bio-technologies and New and Emerging Technologies.

01.0 EXPLORING TECHNOLOGY

Prerequisite: None
Exploring Technology is designed to introduce students to basic technological principles, processes, and skills such as design and problem solving, team decision making, information gathering, and safety. A systems model of communication, manufacturing, power/energy and transportation and construction is presented. Students are exposed to sketching, technical drawing, screen printing, logo and poster development, building of model rockets and bridges, experimentation with computer-assisted graphics, computer-aided design software, electronic devices, and video production. This program is designed to develop an appreciation of technical fields and occupations while learning about skills essential to these systems.

02.0 FUNDAMENTALS OF TECHNOLOGY

Prerequisite: None
Fundamentals of Technology is a prerequisite course for most of the Technology Education systems. Communication skills and tools are the major focus of this course. These same skills are central to all subsequent technology courses. The computer and other electronic devices are necessary for teaching an understanding of contemporary communications, manufacturing, power/energy/transportation and construction systems. An engineering focus of problem solving requires students to define a given problem, conduct appropriate research, develop solutions to the problem, construct prototypes, and evaluate their work.

Fundamentals of Technology is designed to introduce students to those principles and skills used in subsequent technology courses. Students learn to sketch solutions to problems, create technical drawings and presentations, build models, and apply creative problem solving methods. Emphasis is placed on accessing and communicating information, using simple and complex tools in a safe manner, and increasing the students' awareness of the historical and contemporary implications of technology. Students are introduced to computer-aided graphics, design software, and computer-aided manufacturing. Students develop an understanding of the tools, techniques, and processes of technology using design principles, computers, problem solving and model making.

03.0 COMMUNICATION SYSTEMS I

Prerequisite: Fundamentals of Technology

Communication Systems I is designed to develop an understanding of contemporary communication principles and devices. Students develop graphic and electronic communication projects through the use of various media. Activities typically include engineering and technical concepts of sketching, drafting, screen printing, computer-assisted graphics, technical presentations, photography, audio and video production. Students learn to apply the elements of good design to communication products.

04.0 COMMUNICATION SYSTEMS II

Prerequisites: Fundamentals of Technology
Communication Systems I
Communication Systems II uses the skills and insights gained from Communication Systems I. Students develop detailed and integrated communication projects and concepts. Students produce a variety of technical presentations using telecommunications, computer applications, graphics, and photography. This course is designed for students planning to enter business, education, marketing, sales, and advertising or planning to major in science, engineering, or technical fields related to communications.

05.0 MANUFACTURING SYSTEMS I

Prerequisite: Fundamentals of Technology
Manufacturing Systems I is designed for students to study general concepts and principles of manufacturing systems. Working individually and in teams, students design products, develop and conduct market surveys, develop financial and personnel strategies, advertise, market, and produce products using contemporary manufacturing methods. Designed for students interested in product design, creative problem solving, creation of prototypes, computer-assisted design and manufacturing, basic entrepreneurial skills, and engineering concepts.

06.0 MANUFACTURING SYSTEMS II

Prerequisites: Fundamentals of Technology
Manufacturing Systems I
Manufacturing Systems II continues to build on the knowledge and skills gained from Manufacturing Systems I. Students pursue more detailed and integrated manufacturing and production projects. Students continue to use creative problem solving skills, design tools and processes, and apply manufacturing techniques with increasing sophistication. Projects are designed and produced using computer-assisted manufacturing applications, computer numerically-controlled machines and robotics. This course has been developed for students pursuing careers in manufacturing as a designer, drafter, industrial manager, technician or engineer.

07.0 CONSTRUCTION SYSTEMS I

Prerequisite: Fundamentals of Technology
Construction Systems I is designed to introduce classical and contemporary elements, principles and processes of structural systems. Architectural and engineering subjects are studied through research, design, project development and assessment. Students explore the relationship of materials, form, function, and culture of notable past and present structures through practical applications and modeling techniques.

08.0 CONSTRUCTION SYSTEMS II

Prerequisites: Fundamentals of Technology
Construction Systems I

Students of Construction Systems II continue their study of structural systems through research, developing solutions, creating designs, building models and critiquing their work. Working individually and as team members, students apply the skills and insights from the previous course to pursue progressively demanding concepts and relationships of structural systems. Students are given greater freedom to explore individual topics of interest within the area of structural systems.

09.0 POWER/ENERGY AND TRANSPORTATION SYSTEMS I

Prerequisite: Fundamentals of Technology

Students enrolled in this course will explore sources, storage, transportation, consumption, control, environmental impacts, and conservation of power, energy and transportation. Land, ground effects, water, air, space and intermodal transportation systems will be explored with practical activities emphasizing relevant scientific and engineering concepts. Activities include defining problems, designing prototypes, using computer-assisted applications, constructing models, and testing prototypes using appropriate tools such as wind tunnels and performance tests.

10.0 POWER/ENERGY AND TRANSPORTATION SYSTEMS II

Prerequisites: Fundamentals of Technology
Power/Energy and Transportation Systems I

Power/Energy and Transportation Systems II students will continue to build on their knowledge of transportation systems by experimenting with increasingly complex systems and concepts. Guidance, intermodal and urban transportation systems are explored. Students continue to seek solutions to problems through research and design, prototype development and experimentation. Students perform technological assessments on transportation topics of interest.

11.0 EMERGING TECHNOLOGY STUDIES

Prerequisite: Fundamentals of Technology

Emerging/Engineering Technology Studies provides an opportunity for students to research and experiment with a technology-related topic of their choice. Topics may be chosen using the knowledge, skills and insights gained from previous vocational and academic courses, or from the latest information available in professional journals, Internet databases, or professionals in the field. Students work on an individual or small group project under the guidance of a technology teacher with input and involvement from other from other vocational and/or academic teachers and adult mentors. Students investigate technological concepts and apply the tools of technology to better understand other fields of study. The topic of study must be approved by the teacher in accordance with local established guidelines and criteria. Examples of projects might include: extensive research on lasers, fiber topics; biotechnology experiments; production of a multimedia project dealing with an important social issue related to technology; an original technology-related multimedia production.

12.0 PRINCIPLES OF TECHNOLOGY I

Prerequisite: None

Principles of Technology I provides the student with an understanding of the principles and concepts of technology and the mathematics associated with them through hands-on experimentation. Technical instruction on force, work, rate, resistance, energy, and power provides students with an understanding of essential concepts found in science and technology. Abstract concepts and models are stressed through student experimentation and observation. Especially designed for students planning technical, engineering, or science related careers.

13.0 PRINCIPLES OF TECHNOLOGY II

Prerequisite: Principles of Technology I

Principles of Technology II is a continuation of the first level. It provides instruction and experimentation with force, transformers, momentum, waves and vibrations, energy convertors, transducers, radiation theory, optical systems and time constants. Students continue their hands-on activities with increasingly complex phenomena.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Exploring Technology

IDAHO CODE NUMBER: TE 1901

01.01 Demonstrate proper and safe procedures while working with technological tools, apparatus, equipment, systems, and materials.

01.02 Exhibit positive human relations and leadership skills (standard leadership skills task list).

01.03 Demonstrate computer application and literacy.

01.04 Apply basic skills in communications, mathematics and science appropriate to technological content and learning activities.

01.05 Utilize the systems approach in technology.

01.06 Demonstrate technological literacy.

01.07 Discuss individual interests and aptitudes as they relate to a career.

01.08 Demonstrate the use of technological systems in processing resources.

01.09 Discuss the outcomes of technology on society and the environment.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Exploring Technology

IDAHO CODE NUMBER: TE 1901

01.01 DEMONSTRATE PROPER AND SAFE PROCEDURES WHILE WORKING WITH TECHNOLOGICAL TOOLS, APPARATUS, EQUIPMENT, SYSTEMS, AND MATERIALS--
The student will be able to:

1. Follow laboratory safety rules and procedures.
2. Demonstrate good housekeeping within total laboratory.
3. Conduct laboratory activities and equipment operations in a safe manner.
4. Exercise care and respect for all tools, equipment, and materials.
5. Identify color-coding safety standards.
6. Safely use hand tools and power equipment.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.
8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

01.02 EXHIBIT POSITIVE HUMAN RELATIONS AND LEADERSHIP SKILLS (STANDARD LEADERSHIP SKILLS TASK LIST)--
The student will be able to:

1. Work cooperatively with others.
2. Demonstrate ability to do individual and cooperative planning of an activity.

01.03 DEMONSTRATE COMPUTER APPLICATION AND LITERACY--
The student will be able to:

1. Define terms related to computer parts and usage.
2. List ways in which computers are used in technology.
3. Discuss advantages and disadvantages in the use of computers.
4. Demonstrate the application of a computer.

01.04 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--
The student will be able to:

1. Find, understand and apply information from a variety of sources, written and electronic to produce a technical report.
2. Apply proper grammar and spelling in Technology Lab assignments.
3. Properly use math and science concepts in lab activities, using all available resources.

01.05 UTILIZE THE SYSTEMS APPROACH IN TECHNOLOGY--
The student will be able to:

1. Identify and define four systems of Technology Education taught in Idaho technology Labs.
2. Complete a communications activity.
3. Take part in a manufacturing activity.
4. Take part in a construction activity.
5. Take part in a transportation assignment.
6. Define and apply Energy as it relates to Technology Education.
7. Define and apply Power as it relates to Technology Education.
8. Take part in an assignment using basic electronics/electricity theory.

01.06 DEMONSTRATE TECHNOLOGICAL LITERACY--
The student will be able to:

1. Outline major historical technological developments or events.
2. Identify recent advances in technology.
3. Explain problem-solving roles of technology.
4. Define and apply a system.
5. Define and apply a systems model.
6. Define Technology.

01.07 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER-

The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore a career within a specific area of interest.

01.08 DEMONSTRATE THE USE OF TECHNOLOGICAL SYSTEMS IN PROCESSING RESOURCES--
The student will be able to:

1. Define the term Resource.
2. Identify four types of materials conversion.
3. Identify the types, sources and conversions of energy.
4. Identify the steps in processing information.
5. Construct a product using the materials conversion processes.
6. Construct a product that converts energy.
7. Use a computer to process information.

01.09 DISCUSS THE OUTCOMES OF TECHNOLOGY ON SOCIETY AND THE ENVIRONMENT--
The student will be able to:

1. Discuss the outcomes of technology, now and in the future.
2. Discuss the impacts of technology on work, job opportunities, and careers.
3. Discuss how technology can solve and/or create problems.
4. Discuss expected and unexpected outcomes of technology.
5. Discuss desired and undesired outcomes of technology.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Fundamentals of Technology

IDAHO CODE NUMBER: TE 1905

02.01 Demonstrate proper and safe procedures while working with technological tools, apparatus, equipment, systems and materials.

02.02 Exhibit positive human relations and leadership skills (standard leadership skills task list).

02.03 Demonstrate computer application and literacy.

02.04 Integrate basic academic skills and concepts.

02.05 List requisites and employment opportunities for employment in today's and our future technological world.

02.06 Identify evolving technologies in our technological world.

02.07 Demonstrate and apply design/problem-solving processes.

02.08 Demonstrate basic knowledge of communications technology.

02.09 Demonstrate basic knowledge of transportation systems.

02.10 Demonstrate knowledge of robotics.

02.11 Demonstrate knowledge of power and energy.

02.12 Demonstrate basic knowledge of construction technology.

02.13 Demonstrate a basic knowledge of manufacturing technology.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Fundamentals of Technology

IDAHO CODE NUMBER: TE 1905

02.01 DEMONSTRATE PROPER AND SAFE PROCEDURES WHILE WORKING WITH TECHNOLOGICAL TOOLS, APPARATUS, EQUIPMENT, SYSTEMS AND MATERIALS--
The student will be able to:

1. Follow laboratory safety rules and procedures.
2. Demonstrate good housekeeping within total laboratory.
3. Conduct laboratory activities and equipment operations in a safe manner.
4. Exercise care and respect for all tools, equipment, and materials.
5. Identify color-coding safety standards.
6. Safely use hand tools and power equipment.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.
8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

02.02 EXHIBIT POSITIVE HUMAN RELATIONS AND LEADERSHIP SKILLS (STANDARD LEADERSHIP SKILLS TASK LIST)--
The student will be able to:

1. Work cooperatively with others.
2. Demonstrate ability to do individual and cooperative planning of an activity.

02.03 DEMONSTRATE COMPUTER APPLICATION AND LITERACY--
The student will be able to:

1. Define terms related to computer parts and usage.
2. List ways in which computers are used in technology.
3. Discuss advantages and disadvantages in the use of computers.
4. Demonstrate the application of a computer.

02.04 INTEGRATE BASIC ACADEMIC SKILLS AND CONCEPTS--
The student will be able to:

1. Find, understand, and apply information from a variety of sources, written and electronic, to produce a technical report.
2. Read and follow complex written instructions.

3. Answer and ask questions coherently and concisely, and follow spoken instructions.
4. Make and use measurements in both traditional and metric units.
5. Solve work-related problems involving basic arithmetic.

02.05 LIST REQUISITES AND EMPLOYMENT OPPORTUNITIES FOR EMPLOYMENT IN TODAY'S AND OUR FUTURE TECHNOLOGICAL WORLD--
The student will be able to:

1. List occupations, job requirements and employment opportunities in communications technology.
2. List occupations, job requirements and employment opportunities in construction technology.
3. List occupations, job requirements and employment opportunities in manufacturing technology.
4. List occupations, job requirements and employment opportunities in energy, power, and transportation technology.

02.06 IDENTIFY EVOLVING TECHNOLOGIES IN OUR TECHNOLOGICAL WORLD--
The student will be able to:

1. List evolving technologies.
2. Report on a recent or evolving technology.

02.07 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.

02.08 DEMONSTRATE BASIC KNOWLEDGE OF COMMUNICATIONS TECHNOLOGY--
The student will be able to:

1. Discuss the history of communications systems.
2. Identify and apply common terms and definitions associated with communications.
3. Discuss the use of computers in communications.
4. Demonstrate computer literacy through use and application of computers in communication systems.
5. Understand the use and function of telecommunication components.
6. Illustrate knowledge of graphic arts concepts.
7. Demonstrate knowledge of drafting/design concepts, manual and electronic.
8. Understand how information is exchanged between humans and machines.
9. Discuss the influences and effects of communications technology on society, culture and the environment.

02.09 DEMONSTRATE BASIC KNOWLEDGE OF TRANSPORTATION SYSTEMS--
The student will be able to:

1. Discuss the history of transportation (Systems/Future/Impacts).
2. Discuss and demonstrate Land Transportation (Systems/Future/Impacts).
3. Discuss and demonstrate Water Transportation (Systems/Future/Impacts).
4. Discuss and demonstrate Atmospheric Transportation (Systems/Future/Impacts).
5. Discuss and demonstrate Space Transportation (Systems/Future/Impacts).
6. Discuss the future of Transportation.

02.10 DEMONSTRATE KNOWLEDGE OF ROBOTICS--
The student will be able to:

1. Define the term "Robots".
2. Discuss uses of Robots.
3. Define common parts of a Robot.
4. Demonstrate/construct a Robot.

02.11 DEMONSTRATE KNOWLEDGE OF POWER AND ENERGY--
The student will be able to:

1. Identify Fossil Fuels and uses.
2. Define wind and water resources.
3. Demonstrate a wind or water resource.
4. Define/discuss Solar Energy.
5. Define/discuss Nuclear Energy resources.
6. Discuss Energy Conservation.
7. Demonstrate application of power/energy to technology systems.
8. Define/demonstrate basic electronic/electrical theory.

02.12 DEMONSTRATE BASIC KNOWLEDGE OF CONSTRUCTION TECHNOLOGY--
The student will be able to:

1. Apply blueprint reading skills.
2. Discuss/demonstrate basic construction concepts/techniques.
3. Identify construction materials and processes.
4. Discuss uses of new technology in construction.
5. Define basic construction vocabulary.
6. Discuss the future of construction.
7. Discuss the types of construction (land, space, and underwater).

02.13 DEMONSTRATE A BASIC KNOWLEDGE OF MANUFACTURING TECHNOLOGY--
The student will be able to:

1. Demonstrate the essential elements and organization of the free enterprise system.
2. Discuss the history of Manufacturing.
3. Identify types of Production Systems.
4. Demonstrate/define Research and Development.
5. Discuss financial aspects of Manufacturing.
6. Define Industrial Relations.
7. Define materials, material processing, material testing, and material recycling.
8. Discuss/explore traditional and innovative equipment.
9. Discuss/demonstrate the use of robotics/computers (CAM) in manufacturing.
10. Demonstrate the mass production process.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Communications Systems I

IDAHO CODE NUMBER: TE 1951

03.01 Demonstrate the ability to work safely with a variety of technologies.

03.02 Demonstrate interpersonal skills as they relate to the workplace.

03.03 Identify and apply methods of information acquisition and utilization.

03.04 Apply basic skills in communications, mathematics, and science appropriate to technological content and learning activities.

03.05 Demonstrate and apply design/problem-solving processes.

03.06 Express an understanding of technological systems and their complex interrelationships.

03.07 Demonstrate the ability to properly identify, organize, plan, and allocate resources.

03.08 Discuss individual interests and aptitudes as they relate to a career.

03.09 Demonstrate employability skills and habits.

03.10 Demonstrate an understanding of entrepreneurship.

03.11 Make an informed and meaningful career choice.

03.12 Demonstrate technological literacy about communications systems.

03.13 Demonstrate knowledge and perform special skills unique to the information processing technologies.

03.14 Demonstrate knowledge and perform special skills unique to the graphic communication technologies.

03.15 Demonstrate knowledge and perform special skills unique to the electronic communication processing technologies.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Communications Systems I

IDAHO CODE NUMBER: TE 1951

03.01 DEMONSTRATE THE ABILITY TO WORK SAFELY WITH A VARIETY OF TECHNOLOGIES--
The student will be able to:

1. Select appropriate tools, procedures, and/or equipment needed to produce a product.
2. Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment needed to produce a product.
3. Demonstrate knowledge required to maintain and troubleshoot equipment used in a variety of technological systems.
4. Follow laboratory safety rules and procedures.
5. Demonstrate good housekeeping at work station within total laboratory.
6. Identify color-coding safety standards.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.
8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

03.02 DEMONSTRATE INTERPERSONAL SKILLS AS THEY RELATE TO THE WORKPLACE--
The student will be able to:

1. Perform roles in a student personnel system or in the Idaho Technology Student Association (ID-TSA).
2. Participate as a member of a team.
3. Teach others new skills.
4. Identify skills needed to serve clients/customers.
5. Demonstrate leadership skills.
6. Describe strategies necessary for negotiating agreements.
7. Demonstrate the application of skills necessary to work with people of diverse backgrounds.
8. Form an understanding and appreciation for work after listening to or observing technology workers.
9. Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
10. Form an understanding and appreciation for the roles and work of co-workers.

03.03 IDENTIFY AND APPLY METHODS OF INFORMATION ACQUISITION AND UTILIZATION-

The student will be able to:

1. Define terms related to computers.
2. Identify and describe methods of information acquisition and evaluation.
3. Discuss advantages and disadvantages in the application of technologies.
4. Produce a plan to organize and maintain information relevant to emerging technologies.
5. Comprehend and communicate information relevant to emerging technologies.
6. Demonstrate the use of computers to process information.

03.04 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--
The student will be able to:

1. Identify and explain the main and subordinate ideas in a written work.
2. Distinguish different purposes and methods of writing, identify a writer's point of view and tone, and interpret a writer's meaning.
3. Define unfamiliar words by use of structural analysis, decoding, contextual clues, or by using a dictionary.
4. Distinguish fact from opinion.
5. Read critically by asking pertinent questions, by recognizing assumptions and implications, and by evaluating ideas.
6. Select, relate, and organize, ideas using outlining and/or graphic organizers and develop the ideas in coherent paragraphs.
7. Improve one's own writing by restructuring, correcting errors, and rewriting.
8. Gather and organize information from primary and secondary sources; write a report using this research; quote, paraphrase, and summarize accurately; and cite sources properly.
9. Vary one's writing style, including vocabulary and sentence structure, for different readers and purposes.
10. Write logical and understandable statements, or phrases, to accurately fill out commonly used forms.
11. Compose unified and coherent correspondence, directions, descriptions, explanations and reports.
12. Participate critically and constructively in the exchange of ideas, particularly during class discussions and conferences with instructors.
13. Conceive and develop ideas about a topic for the purpose of speaking to a group; choose and organize related ideas; present them clearly in Standard English; and evaluate similar presentations by others.

14. Use the mathematics of:
    -integers, fractions, and decimals;
    -ratios, proportions, and percentages;
    -roots and powers;
    -algebra;
    -geometry.
15. Make estimates and approximations, and judge the reasonableness of a result.
16. Use elementary concepts of probability and statistics.
17. Draw, read, and analyze graphs, charts, and tables.
18. Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solutions of such questions through familiarity with laboratory and field work.
19. Organize and communicate the results obtained by observation and experimentation.
20. Apply the basic principles of biology, physics, and chemistry. (properties of matter; structure of compounds; concepts of motion; temperature, pressure and volume; work, power, force and energy; machines; human cell structure).
21. Identify problems rooted in basic biology, physics, or chemistry (effects of hazardous materials on health and safety, effects of drugs on health, trouble shooting problems on a machine).

03.05 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.
4. Document each step of the design/problem-solving process.
5. Demonstrate "Brainstorming" as a process to solve problems.
6. Define "critical thinking" and its value in the problem-solving process.

03.06 EXPRESS AN UNDERSTANDING OF TECHNOLOGICAL SYSTEMS AND THEIR COMPLEX INTERRELATIONSHIPS--
The student will be able to:

1. Demonstrate a knowledge of how social, organizational, and technological systems work.
2. Explore methods used to monitor and correct performance of technological systems.
3. Design and implement an optimal solution to a given problem.
4. Outline major historical technological developments or events.
5. Identify recent advances in technology.
6. Explain problem-solving roles of technology.
7. Forecast a technological development or event.
8. Define technology.

03.07 DEMONSTRATE THE ABILITY TO PROPERLY IDENTIFY, ORGANIZE, PLAN, AND ALLOCATE RESOURCES--
The student will be able to:

1. Demonstrate the ability to select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
2. Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
3. Demonstrate the ability to acquire, store, allocate, and use materials or space efficiently.
4. Display a knowledge of the efficient use of human resources.

03.08 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--
The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore careers within specific areas of interest.

03.09 DEMONSTRATE EMPLOYABILITY SKILLS AND HABITS--
The student will be able to:

1. Identify employment opportunities.
2. Apply employment seeking skills.
3. Interpret employment capabilities.
4. Demonstrate appropriate work behavior.
5. Maintain safe and healthy environment.
6. Maintain businesslike image.
7. Maintain working relationships with others.
8. Communicate on the job.
9. Adapt to change.
10. Demonstrate a knowledge of manufacturing.
11. Perform mathematical calculations.
12. Compile a portfolio.

03.10 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP--
The student will be able to:

1. Define entrepreneurship.
2. Describe the importance of entrepreneurship to the American economy.
3. List the advantages and disadvantages of business ownership.
4. Identify the risks involved in ownership of a business.
5. Identify the necessary personal characteristics of a successful entrepreneur.
6. Identify the business skills needed to operate a small business efficiently and effectively.

03.11 MAKE AN INFORMED AND MEANINGFUL CAREER CHOICE--
The student will be able to:

1. Make a tentative occupational choice based on the information learned and interest developed in this course.
2. Review tentative occupational choices based on the information learned and interest developed in this course.

03.12 DEMONSTRATE TECHNOLOGICAL LITERACY ABOUT COMMUNICATIONS SYSTEMS--
The student will be able to:

1. Define communications technology.
2. Outline major technological developments and events in the history of communications systems technology.
3. Identify recent advances in communications technology.
4. Forecast a development or event in communications technology.

03.13 DEMONSTRATE KNOWLEDGE AND PERFORM SPECIAL SKILLS UNIQUE TO THE INFORMATION PROCESSING TECHNOLOGIES--
The student will be able to:

1. Define the function of information processing technology.
2. Describe three careers for information processing technology.
3. Identify and demonstrate the tools, processes and materials used in the information processing technology.
4. Demonstrate modern communication systems using sound and speech, symbols and codes, printed works, drawing and pictures.
5. Identify several telecommunication services.
6. Demonstrate problem-solving skills relative to the information processing technology.
7. Demonstrate the use of computer hardware and software relative to information processing technologies.

03.14 DEMONSTRATE KNOWLEDGE AND PERFORM SPECIAL SKILLS UNIQUE TO THE GRAPHIC COMMUNICATION TECHNOLOGIES--
The student will be able to:

1. Define the function of graphic communication technologies.
2. Describe three careers for graphic communication technologies.
3. Identify and demonstrate the tools, processes and materials used in graphic communication technology system.
4. Demonstrate modern communication systems using symbols and codes, printed works, drawing and pictures.
5. Demonstrate problem-solving skills relative to the graphic communication technologies.
6. Demonstrate the use of computer hardware and software relative to graphic communication technologies.

03.15 DEMONSTRATE KNOWLEDGE AND PERFORM SPECIAL SKILLS UNIQUE TO THE ELECTRONIC COMMUNICATION PROCESSING TECHNOLOGIES--
The student will be able to:

1. Define the function of electronic communication technology.
2. Describe three careers for electronic communication technology.
3. Identify and demonstrate the tools, processes and materials used in electronic communication technology.
4. Compare and contrast different electronic communication technologies.
5. Demonstrate modern communication systems using sound and speech, symbols and codes, drawing and pictures.
6. Identify several telecommunication services.
7. Demonstrate problem-solving skills relative to electronic communication technologies.
8. Demonstrate the use of computer hardware and software relative to electronic communication technologies.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Communication Systems II

IDAHO CODE NUMBER: TE 1952

04.01 Demonstrate the ability to work safely with a variety of technologies.

04.02 Demonstrate interpersonal skills as they relate to the workplace.

04.03 Identify and apply methods of information acquisition and utilization.

04.04 Apply basic skills in communications, mathematics, and science appropriate to technological content and learning activities.

04.05 Demonstrate and apply design/problem-solving processes.

04.06 Express an understanding of technological systems and their complex interrelationships.

04.07 Demonstrate the ability to properly identify, organize, plan, and allocate resources.

04.08 Discuss individual interests and aptitudes as they relate to a career.

04.09 Demonstrate employability skills and habits.

04.10 Demonstrate an understanding of entrepreneurship.

04.11 Make an informed and meaningful career choice.

04.12 Demonstrate verbal communication skills.

04.13 Demonstrate technical knowledge and skills relating to information processing technologies.

04.14 Demonstrate technical knowledge and skills relating to graphic communication technologies.

04.15 Demonstrate technical knowledge and skills relating to electronic communication technologies.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Communication Systems II

IDAHO CODE NUMBER: TE 1952

04.01 DEMONSTRATE THE ABILITY TO WORK SAFELY WITH A VARIETY OF TECHNOLOGIES--
The student will be able to:

1. Select appropriate tools, procedures, and/or equipment needed to produce a product.
2. Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment needed to produce a product.
3. Demonstrate knowledge required to maintain and troubleshoot.
4. Follow laboratory safety rules and procedures.
5. Demonstrate good housekeeping at work state and within total laboratory.
6. Identify color-coding safety standards.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.
8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

04.02 DEMONSTRATE INTERPERSONAL SKILLS AS THEY RELATE TO THE WORKPLACE--
The student will be able to:

1. Perform roles in a student personnel system or in the Idaho Technology Student Association (ID-TSA).
2. Participate as a member of a team.
3. Teach others new skills.
4. Identify skills needed to serve clients/customers.
5. Demonstrate leadership skills.
6. Describe strategies necessary for negotiating agreements.
7. Demonstrate the application of skills necessary to work with people of diverse backgrounds.
8. Form an understanding and appreciation for work after listening to or observing technology workers.
9. Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
10. Form an understanding and appreciation for the roles and work of co-workers.

04.03 IDENTIFY AND APPLY METHODS OF INFORMATION ACQUISITION AND UTILIZATION-

The student will be able to:

1. Define terms related to computers.
2. Identify and describe methods of information acquisition and evaluation.
3. Discuss advantages and disadvantages in the application of technologies.
4. Produce a plan to organize and maintain information relevant to emerging technologies.
5. Comprehend and communicate information relevant to emerging technologies.
6. Demonstrate the use of computers to process information.

04.04 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--
The student will be able to:

1. Use the features of books and reference materials, such as table of contents, preface, introduction, titles and subtitles, index, glossary, appendix, and bibliography.
2. Read and follow complex written directions.
3. Find, understand, and apply information from a variety of sources (books, manuals, newspapers, periodicals, directories, reference works, computer printouts, and other printed matter or electronic sources such as video display terminals).
4. Use and expand general and specialized vocabulary (including abbreviations, acronyms, and concepts) as appropriate to subject areas studied at the grade level.
5. Write Standard English sentences with correct:
   - sentence structure;
   - verb forms;
   - punctuation, capitalization, possessives, plural forms, and other matters of mechanics;
   - word choice and spelling.
6. Answer and ask questions coherently and concisely, and follow spoken instructions.
7. Identify and comprehend the main and subordinate ideas in lectures and discussions, ask questions to clarify information heard, and report accurately what others have said.
8. Perform with accuracy the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals, and integers.
9. Make and use measurements in both traditional and metric units.
10. Formulate and solve problems in mathematical terms, selecting appropriate approaches and tools (mental computation, trial and error, paper-and-pencil techniques, calculator, and computer).
11. Solve work-related problems involving the basic arithmetic operations using whole numbers, fractions, decimals, and percents.
12. Describe the role of observation and experimentation in the development of scientific theories.
13. Gather scientific information through skills in laboratory, field, and library work.
14. Draw conclusions or make inferences from data.

15. Apply basic scientific/technical solutions to the appropriate problems.

04.05 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.
4. Document each step of the design/problem-solving process.
5. Demonstrate "Brainstorming" as a process to solve problems.
6. Define "critical thinking" and its value in the problem-solving process.

04.06 EXPRESS AN UNDERSTANDING OF TECHNOLOGICAL SYSTEMS AND THEIR COMPLEX INTERRELATIONSHIPS--
The student will be able to:

1. Demonstrate a knowledge of how social, organizational, and technological systems work.
2. Explore methods used to monitor and correct performance of technological systems.
3. Design and implement an optimal solution to a given problem.
4. Outline major historical technological developments or events.
5. Identify recent advances in technology.
6. Explain problem-solving roles of technology.
7. Forecast a technological development or event.
8. Define technology.

04.07 DEMONSTRATE THE ABILITY TO PROPERLY IDENTIFY, ORGANIZE, PLAN, AND ALLOCATE RESOURCES--
The student will be able to:

1. Demonstrate the ability to select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
2. Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
3. Demonstrate the ability to acquire, store, allocate, and use materials or space efficiently.
4. Display a knowledge of the efficient use of human resources.

04.08 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--
The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore careers within specific areas of interest.

04.09 DEMONSTRATE EMPLOYABILITY SKILLS AND HABITS--
The student will be able to:

1. Identify employment opportunities.
2. Apply employment seeking skills.
3. Interpret employment capabilities.
4. Demonstrate appropriate work behavior.
5. Maintain safe and healthy environment.
6. Maintain businesslike image.
7. Maintain working relationships with others.
8. Communicate on the job.
9. Adapt to change.
10. Demonstrate a knowledge of manufacturing.
11. Perform mathematical calculations.
12. Compile a portfolio.

04.10 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP--
The student will be able to:

1. Define entrepreneurship.
2. Describe the importance of entrepreneurship to the American economy.
3. List the advantages and disadvantages of business ownership.
4. Identify the risks involved in ownership of a business.
5. Identify the necessary personal characteristics of a successful entrepreneur.
6. Identify the business skills needed to operate a small business efficiently and effectively.

04.11 MAKE AN INFORMED AND MEANINGFUL CAREER CHOICE--
The student will be able to:

1. Make a tentative occupational choice based on the information learned and interest developed in this course.
2. Review tentative occupational choices based on the information learned and interest developed in this course.

04.12 DEMONSTRATE VERBAL COMMUNICATION SKILLS--
The student will be able to:

1. Demonstrate verbal communication skills by giving directions to another person.
2. Demonstrate verbal communications skills by listening to and following directions from another person.

04.13 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS RELATING TO INFORMATION PROCESSING TECHNOLOGIES--
The student will be able to:

1. Describe several information processing devices.
2. Chart the various processes involved in transmission of sound, video and data.
3. Demonstrate technical skills by processing information with a computer, peripherals and applications.

04.14 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS RELATING TO GRAPHIC COMMUNICATION TECHNOLOGIES--
The student will be able to:

1. Describe several graphic communication processes.
2. Create a multimedia presentation.
3. Demonstrate technical skills relating to graphic communications using a computer, peripherals and applications.
4. Demonstrate traditional drafting skills.
5. Demonstrate technical skills relating to continuous tone photography.
6. Describe the various printing processes used in industry.

04.15 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS RELATING TO ELECTRONIC COMMUNICATION TECHNOLOGIES--
The student will be able to:

1. Describe several electronic communications devices.
2. Chart the various electronic communication systems involved in transmission of sound, video and data.
3. Demonstrate technical skills of transmission and reception of electronic communications.
4. Send and receive data via a computer network.
5. Explore emerging technologies such as lasers, fiber optics, etc.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Manufacturing Systems I

IDAHO CODE NUMBER: TE 1931

05.01 Demonstrate the ability to work safely with a variety of technologies.

05.02 Demonstrate interpersonal skills as they relate to the workplace.

05.03 Identify and apply methods of information acquisition and utilization.

05.04 Apply basic skills in communications, mathematics, and science appropriate to technological content and learning activities.

05.05 Demonstrate and apply design/problem-solving processes.

05.06 Express an understanding of technological systems and their complex interrelationships.

05.07 Demonstrate the ability to properly identify, organize, plan, and allocate resources.

05.08 Discuss individual interests and aptitudes as they relate to a career.

05.09 Demonstrate employability skills and habits.

05.10 Demonstrate an understanding of entrepreneurship.

05.11 Make an informed and meaningful career choice.

05.12 Demonstrate technological literacy about manufacturing systems.

05.13 Demonstrate knowledge of the advancement and history in manufacturing.

05.14 Describe types of organization, ownership and management systems.

05.15 Describe types of production systems.

05.16 Demonstrate knowledge of research and development techniques.

05.17 Demonstrate knowledge of financial aspects.

05.18 Demonstrate knowledge of industrial relations.

05.19 Demonstrate knowledge of characteristics of various materials and natural resources used in manufacturing.

05.20 Demonstrate use of traditional and innovative equipment.

05.21 Demonstrate knowledge of material processing and recycling.

05.22 Demonstrate procedures of converting energy.

05.23 Demonstrate knowledge of production planning.

05.24 Demonstrate marketing techniques.

05.25 Demonstrate knowledge of free enterprise systems.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Manufacturing Systems I

IDAHO CODE NUMBER: TE 1931

05.01 DEMONSTRATE THE ABILITY TO WORK SAFELY WITH A VARIETY OF TECHNOLOGIES--
The student will be able to:

1. Select appropriate tools, procedures, and/or equipment needed to produce a product.
2. Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment needed to produce a product.
3. Demonstrate knowledge required to maintain and troubleshoot equipment used in a variety of technological systems.
4. Follow laboratory safety rules and procedures.
5. Demonstrate good housekeeping at work station within total laboratory.
6. Identify color-coding safety standards.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.
8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

05.02 DEMONSTRATE INTERPERSONAL SKILLS AS THEY RELATE TO THE WORKPLACE--
The student will be able to:

1. Perform roles in a student personnel system or in the Idaho Technology Student Association (ID-TSA).
2. Participate as a member of a team.
3. Teach others new skills.
4. Identify skills needed to serve clients/customers.
5. Demonstrate leadership skills.
6. Describe strategies necessary for negotiating agreements.
7. Demonstrate the application of skills necessary to work with people of diverse backgrounds.
8. Form an understanding and appreciation for work after listening to or observing technology workers.
9. Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
10. Form an understanding and appreciation for the roles and work of co-workers.

05.03 IDENTIFY AND APPLY METHODS OF INFORMATION ACQUISITION AND UTILIZATION- The student will be able to:

1. Define terms related to computers.
2. Identify and describe methods of information acquisition and evaluation.
3. Discuss advantages and disadvantages in the application of technologies.
4. Produce a plan to organize and maintain information relevant to emerging technologies.
5. Comprehend and communicate information relevant to emerging technologies.
6. Demonstrate the use of computers to process information.

05.04 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES-- The student will be able to:

1. Identify and explain the main and subordinate ideas in a written work.
2. Distinguish different purposes and methods of writing, identify a writer's point of view and tone, and interpret a writer's meaning.
3. Define unfamiliar words by use of structural analysis, decoding, contextual clues, or by using a dictionary.
4. Distinguish fact from opinion.
5. Read critically by asking pertinent questions, by recognizing assumptions and implications, and by evaluating ideas.
6. Select, relate, and organize, ideas using outlining and/or graphic organizers and develop the ideas in coherent paragraphs.
7. Improve one's own writing by restructuring, correcting errors, and rewriting.
8. Gather and organize information from primary and secondary sources; write a report using this research; quote, paraphrase, and summarize accurately; and cite sources properly.
9. Vary one's writing style, including vocabulary and sentence structure, for different readers and purposes.
10. Write logical and understandable statements, or phrases, to accurately fill out commonly used forms.
11. Compose unified and coherent correspondence, directions, descriptions, explanations and reports.
12. Participate critically and constructively in the exchange of ideas, particularly during class discussions and conferences with instructors.
13. Conceive and develop ideas about a topic for the purpose of speaking to a group; choose and organize related ideas; present them clearly in Standard English; and evaluate similar presentations by others.
14. Use the mathematics of:
    - -integers, fractions, and decimals;
    - -ratios, proportions, and percentages;
    - -roots and powers;
    - -algebra;
    - -geometry.
15. Make estimates and approximations, and judge the reasonableness of a result.

16. Use elementary concepts of probability and statistics.
17. Draw, read, and analyze graphs, charts, and tables.
18. Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solutions of such questions through familiarity with laboratory and field work.
19. Organize and communicate the results obtained by observation and experimentation.
20. Apply the basic principles of biology, physics, and chemistry. (properties of matter; structure of compounds; concepts of motion; temperature, pressure and volume; work, power, force and energy; machines; human cell structure).
21. Identify problems rooted in basic biology, physics, or chemistry (effects of hazardous materials on health and safety, effects of drugs on health, trouble shooting problems on a machine).

05.05 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.
4. Document each step of the design/problem-solving process.
5. Demonstrate "Brainstorming" as a process to solve problems.
6. Define "critical thinking" and its value in the problem-solving process.

05.06 EXPRESS AN UNDERSTANDING OF TECHNOLOGICAL SYSTEMS AND THEIR COMPLEX INTERRELATIONSHIPS--
The student will be able to:

1. Demonstrate a knowledge of how social, organizational, and technological systems work.
2. Explore methods used to monitor and correct performance of technological systems.
3. Design and implement an optimal solution to a given problem.
4. Outline major historical technological developments or events.
5. Identify recent advances in technology.
6. Explain problem-solving roles of technology.
7. Forecast a technological development or event.
8. Define technology.

05.07 DEMONSTRATE THE ABILITY TO PROPERLY IDENTIFY, ORGANIZE, PLAN, AND ALLOCATE RESOURCES--
The student will be able to:

1. Demonstrate the ability to select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
2. Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
3. Demonstrate the ability to acquire, store, allocate, and use materials or space efficiently.

4. Display a knowledge of the efficient use of human resources.

05.08 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--
The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore careers within specific areas of interest.

05.09 DEMONSTRATE EMPLOYABILITY SKILLS AND HABITS--
The student will be able to:

1. Identify employment opportunities.
2. Apply employment seeking skills.
3. Interpret employment capabilities.
4. Demonstrate appropriate work behavior.
5. Maintain safe and healthy environment.
6. Maintain businesslike image.
7. Maintain working relationships with others.
8. Communicate on the job.
9. Adapt to change.
10. Demonstrate a knowledge of manufacturing.
11. Perform mathematical calculations.
12. Compile a portfolio.

05.10 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP--
The student will be able to:

1. Define entrepreneurship.
2. Describe the importance of entrepreneurship to the American economy.
3. List the advantages and disadvantages of business ownership.
4. Identify the risks involved in ownership of a business.
5. Identify the necessary personal characteristics of a successful entrepreneur.
6. Identify the business skills needed to operate a small business efficiently and effectively.

05.11 MAKE AN INFORMED AND MEANINGFUL CAREER CHOICE--
The student will be able to:

1. Make a tentative occupational choice based on the information learned and interest developed in this course.
2. Review tentative occupational choices based on the information learned and interest developed in this course.

05.12 DEMONSTRATE TECHNOLOGICAL LITERACY ABOUT MANUFACTURING SYSTEMS--
The student will be able to:

1. Define manufacturing technology.
2. Outline major technological developments and events in the history of manufacturing systems technology.
3. Identify recent advances in manufacturing technology.
4. Forecast a development or event in manufacturing technology.

05.13 DEMONSTRATE KNOWLEDGE OF THE ADVANCEMENT AND HISTORY IN MANUFACTURING--
The student will be able to:

1. Illustrate and recall the history of the home handicraft system, era.
2. Analyze the history and events of the mercantile system.
3. Report, employ and test various machines that are used in the manufacturing systems.
4. Demonstrate, experiment and construct various mass production sequences.
5. Recognize and demonstrate different types of factory systems.
6. Research, employ, diagram, prepare and assess different assembly line techniques.
7. Explain, operate and propose the advantages and disadvantages of computers and automation in manufacturing production systems.

05.14 DESCRIBE TYPES OF ORGANIZATION, OWNERSHIP AND MANAGEMENT SYSTEMS--
The student will be able to:

1. Identify, practice and compare the business and manufacturing aspects of sole proprietorship.
2. Define, discuss, apply and examine the functions of partnerships.

05.15 DESCRIBE TYPES OF PRODUCTION SYSTEMS--
The student will be able to:

1. Dramatize, compare and design a custom manufacturing system.
2. Identify, employ and create an intermittent manufacturing system.
3. Demonstrate, appraise and manage a continuous manufacturing system.

05.16 DEMONSTRATE KNOWLEDGE OF RESEARCH AND DEVELOPMENT TECHNIQUES--
The student will be able to:

1. Discuss and demonstrate the steps in problem solving.
2. Relate, review, apply and test techniques used in basic research.
3. Define, discuss, interpret and arrange the principles demonstrated in applied research.

05.17 DEMONSTRATE KNOWLEDGE OF FINANCIAL ASPECTS--
The student will be able to:

1. Identify, analyze and organize the various aspects needed for capital resources.
2. Illustrate and practice the accounting techniques used in manufacturing.
3. Employ and plan the procedures involved in the purchasing aspects of manufacturing.
4. Analyze, collect and evaluate data researched and collected from marketing practices applied in manufacturing.

05.18 DEMONSTRATE KNOWLEDGE OF INDUSTRIAL RELATIONS--
The student will be able to:

1. Relate, report and dramatize the different situations involved in industrial relationships.
2. List, explain and compose the various facets of employee relations in a manufacturing enterprise.
3. Define, express and set up the different situations involved in public relations with their customers.

05.19 DEMONSTRATE KNOWLEDGE OF CHARACTERISTICS OF VARIOUS MATERIALS AND NATURAL RESOURCES USED IN MANUFACTURING--
The student will be able to:

1. Describe the science of materials, including their properties.
2. Define, discuss, apply, experiment, create and appraise the various methods of operation and uses for woods, metals, plastics, composites, biotechnology and natural resources.

05.20 DEMONSTRATE USE OF TRADITIONAL AND INNOVATIVE EQUIPMENT--
The student will be able to:

1. Identify and describe tools used in the manufacturing process.
2. Identify and describe the six basic machines used in manufacturing.
3. Demonstrate the safe operation of selected machines used in the manufacturing lab.

05.21 DEMONSTRATE KNOWLEDGE OF MATERIAL PROCESSING AND RECYCLING--
The student will be able to:

1. Define, identify and illustrate the three basic processes in material processing.
2. Illustrate the proper practice and tests for thermal forming, magnetic forming, chemical forming and natural forming.
3. Demonstrate the proper practice and experiments for mechanical separating, chemical separating and electrical separating.
4. Employ the proper practice and experiments for mechanical combining, electrical combining, chemical combining, alloys and composites.

05.22 DEMONSTRATE PROCEDURES OF CONVERTING ENERGY--
The student will be able to:

1. Identify, apply and test methods of converting electrical energy (hydro, chemical, innovative methods...etc.).
2. Recognize, employ and experiment with methods of converting mechanical energy (steam, internal combustion engine, innovative methods...etc.).
3. Describe, illustrate and test methods of converting chemical energy (coal, batteries, petroleum, natural gas, innovative methods...etc.).

05.23 DEMONSTRATE KNOWLEDGE OF PRODUCTION PLANNING--
The student will be able to:

1. Define and assess steps in production planning in specific areas of market analysis, research and development, organizational structures, production, distribution and customer relation/product evaluation.
2. Describe the quality control engineering processes.

05.24 DEMONSTRATE MARKETING TECHNIQUES--
The student will be able to:

1. Recall, report, practice and create proper techniques and strategies that will benefit their student manufacturing organization in creating and analyzing market demand, competition, market performance, consumer and market surveys.
2. Describe advertising methods.
3. Describe sales techniques.
4. Describe packaging procedures.
5. Describe shipping procedures associated with marketing products.

05.25 DEMONSTRATE KNOWLEDGE OF FREE ENTERPRISE SYSTEMS--
The student will be able to:

1. Explain, compare and evaluate the types of free enterprise systems.
2. Explaining the advantages and disadvantages of the common economic systems.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Manufacturing Systems II

IDAHO CODE NUMBER: TE 1932

06.01 Describe the types of manufacturing systems.

06.02 Discuss the implications of people: The most important resource.

06.03 Apply basic skills in communications, mathematics, and science appropriate to technological content and learning activities.

06.04 Demonstrate knowledge of manufacturing materials.

06.05 Demonstrate knowledge of prototype design engineering processes.

06.06 Demonstrate knowledge of tools and machines used in manufacturing systems.

06.07 Demonstrate knowledge of the finances of manufacturing.

06.08 Demonstrate knowledge of production engineering processes.

06.09 Demonstrate knowledge of organization, ownership and management systems.

06.10 Demonstrate knowledge of processing materials.

06.11 Demonstrate knowledge of marketing processes.

06.12 Demonstrate knowledge of financial processes.

06.13 Demonstrate knowledge of manufactured goods.

06.14 Discuss the relationship of scrap, waste, pollution and recyclability.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Manufacturing Systems II

IDAHO CODE NUMBER: TE 1932

06.01 DESCRIBE THE TYPES OF MANUFACTURING SYSTEMS--
The student will be able to:

1. Distinguish between the various manufacturing systems.
2. Select which system is appropriate for a specific product.
3. Demonstrate, appraise and manage a continuous manufacturing system.

06.02 DISCUSS THE IMPLICATIONS OF PEOPLE: THE MOST IMPORTANT RESOURCE--
The student will be able to:

1. Explain why people are the most important resource in a manufacturing system.
2. Identify guidelines for the hiring of people for manufacturing.
3. Describe methods of protecting people in the manufacturing workplace.
4. Design and complete a job-application-form for a specific job within a manufacturing system.

06.03 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--
The student will be able to:

1. Use the features of books and reference materials, such as table of contents, preface, introduction, titles and subtitles, index, glossary, appendix, and bibliography.
2. Read and follow complex written directions.
3. Find, understand, and apply information from a variety of sources (books, manuals, newspapers, periodicals, directories, reference works, computer printouts, and other printed matter or electronic sources such as video display terminals).
4. Use and expand general and specialized vocabulary (including abbreviations, acronyms, and concepts) as appropriate to subject areas studied at the grade level.
5. Write Standard English sentences with correct:
   - sentence structure;
   - verb forms;
   - punctuation, capitalization, possessives, plural forms, and other matters of mechanics;
   - word choice and spelling.
6. Answer and ask questions coherently and concisely, and follow spoken instructions.

7. Identify and comprehend the main and subordinate ideas in lectures and discussions, ask questions to clarify information heard, and report accurately what others have said.
8. Perform with accuracy the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals, and integers.
9. Make and use measurements in both traditional and metric units.
10. Formulate and solve problems in mathematical terms, selecting appropriate approaches and tools (mental computation, trial and error, paper-and-pencil techniques, calculator, and computer).
11. Solve work-related problems involving the basic arithmetic operations using whole numbers, fractions, decimals, and percents.
12. Describe the role of observation and experimentation in the development of scientific theories.
13. Gather scientific information through skills in laboratory, field, and library work.
14. Draw conclusions or make inferences from data.
15. Apply basic scientific/technical solutions to the appropriate problems.

06.04 DEMONSTRATE KNOWLEDGE OF MANUFACTURING MATERIALS--
The student will be able to:

1. Define and identify 5 basic manufacturing materials.
2. Describe the primary manufacturing process involved in the production of a common raw material to the completed product.
3. Evaluate the mechanical, chemical, thermal and electrical properties of a selected material.
4. Distinguish between the classifications of metallic, ferrous, nonferrous, polymeric, ceramic and composite materials.

06.05 DEMONSTRATE KNOWLEDGE OF PROTOTYPE DESIGN ENGINEERING PROCESSES--
The student will be able to:

1. Demonstrate the research and development process.
2. Describe the six stages in the design engineering process.
3. Defend the importance of working drawings in the manufacturing process.
4. Demonstrate the advantages of using computer aided drafting in the design stages of a product.
5. Design a mass production project for a class prototype.

06.06 DEMONSTRATE KNOWLEDGE OF TOOLS AND MACHINES USED IN MANUFACTURING SYSTEMS--
The student will be able to:

1. Demonstrate the proper use and practice of machines and tools used in a traditional manufacturing process (partial example - drill press, table saw, engine lathe, CNC, micrometer, caliper, scales and ruler).
2. Demonstrate the proper use and application of machines and tools used in an innovative manufacturing process (partial example - robotics, CAM, CIM, plasma, water jet, laser, sonic, fiber, optic, pneumatic and hydraulic).

06.07 DEMONSTRATE KNOWLEDGE OF THE FINANCES OF MANUFACTURING--
The student will be able to:

1. Conduct a market research on a given product.
2. Describe what is meant by "It takes money to make money".
3. List various methods of acquiring money for a manufacturing company.
4. Describe various costs associated with a manufacturing company.

06.08 DEMONSTRATE KNOWLEDGE OF PRODUCTION ENGINEERING PROCESSES--
The student will be able to:

1. Illustrate the three production processes of methods, manufacturing and quality control engineering.
2. Identify the importance of operations process charts, flow process charts and operations sheets.
3. Recognize the importance of tooling.
4. Operate and identify various gages used in the quality inspection process.
5. Define the terms "tooling up, pilot run, bottle neck and debugging".

06.09 DEMONSTRATE KNOWLEDGE OF ORGANIZATION, OWNERSHIP AND MANAGEMENT SYSTEMS--
The student will be able to:

1. Analyze the advantages and disadvantages of the five different types of ownership.
2. Explain the organization of a basic corporation and the expanding role of corporations worldwide.
3. List the four primary jobs of managers.
4. Identify the importance of the concepts behind total quality control in manufacturing.
5. Set up a corporation to sell a class project.

06.10 DEMONSTRATE KNOWLEDGE OF PROCESSING MATERIALS--
The student will be able to:

1. Demonstrate form-changing processes of materials.
2. Distinguish between primary and secondary production form-changing processes in the manufacturing system.
3. Analyze and demonstrate the difference between materials-forming, separating and combining processes.
4. Demonstrate materials testing techniques.

06.11 DEMONSTRATE KNOWLEDGE OF MARKETING PROCESSES--
The student will be able to:

1. Illustrate that marketing research as an input that helps to determine demand for a product.
2. Describe the characteristics of the consumer and industrial goods markets.
3. Identify the functions of marketing, including product planning, advertising, sales and product service.
4. Analyze the problems (ethics) related to marketing techniques.

06.12 DEMONSTRATE KNOWLEDGE OF FINANCIAL PROCESSES--
The student will be able to:

1. Interpret various methods of calculating a break-even analysis for a manufactured product.
2. Demonstrate the basic steps involved in keeping track of financial activities with a general ledger.
3. Illustrate the process of calculating payroll and the various payroll deductions.
4. List the components of a balance sheet for a manufacturing company.
5. Apply the means of reporting manufacturing profits and calculating dividends with an income statement.

06.13 DEMONSTRATE KNOWLEDGE OF MANUFACTURED GOODS--
The student will be able to:

1. Analyze why the availability of manufactured goods is one of the variables that determine standard of living.
2. Classify consumer goods as durable or nondurable.
3. Recognize the impact of goods on quality and length of human life.
4. Define the impacts and consequences of military goods, both conventional and nuclear.

06.14 DISCUSS THE RELATIONSHIP OF SCRAP, WASTE, POLLUTION AND RECYCLABILITY--
The student will be able to:

1. Describe how mass production is followed by mass consumption, which is usually followed by mass scrap, waste, pollution and recyclability.
2. Explain why scrap is an output for one manufacturer and an input for another.
3. Identify pollution as a direct and indirect output of manufacturing.
4. Describe major air pollutants.
5. Report on groundwater contamination and toxic waste chemicals.
6. Identify the difficulties associated with solving non-point source pollution problems.
7. Illustrate the modern historical shift from air and water disposal to land disposal of toxic waste chemicals.
8. Evaluate products for appropriate use of materials.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Construction Systems I

IDAHO CODE NUMBER: TE 1920

07.01 Demonstrate proper and safe procedures while working with technological tools, apparatus, equipment, systems, and materials.

07.02 Demonstrate interpersonal skills as they relate to the workplace.

07.03 Identify and apply methods of information acquisition and utilization.

07.04 Apply basic skills in communications, mathematics, and science appropriate to technological content and learning activities.

07.05 Demonstrate and apply design/problem-solving processes.

07.06 Express an understanding of technological systems and their complex interrelationships.

07.07 Demonstrate the ability to properly identify, organize, plan, and allocate resources.

07.08 Discuss individual interests and aptitudes as they relate to a career.

07.09 Demonstrate employability skills and habits.

07.10 Demonstrate an understanding of entrepreneurship.

07.11 Make an informed and meaningful career choice.

07.12 Demonstrate technological literacy about construction systems.

07.13 Exhibit positive human relations and leadership skills.

07.14 Demonstrate computer application and literacy.

07.15 Demonstrate and apply design/problem-solving processes.

07.16 Demonstrate technological literacy.

07.17 Display an understanding and appreciation for the dignity and worth of honest labor.

07.18 Discuss individual interests and aptitudes as they relate to a career.

07.19 Demonstrate evolving construction technologies.

07.20 Perform special skills unique to construction technology.

07.21 Express a knowledge of factors that impact on construction technology and practices.

07.22 List requisites and career opportunities for employment in construction technology.

07.23 Demonstrate work common to residential, commercial and civil construction technology.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Construction Systems I

IDAHO CODE NUMBER: TE 1920

07.01 DEMONSTRATE PROPER AND SAFE PROCEDURES WHILE WORKING WITH TECHNOLOGICAL TOOLS, APPARATUS, EQUIPMENT, SYSTEMS, AND MATERIALS -- The student will be able to:

1. Follow laboratory safety rules and procedures.
2. Demonstrate good housekeeping at work station within total laboratory.
3. Conduct laboratory activities and equipment operations in a safe manner.
4. Exercise care and respect for all tools, equipment, and materials.
5. Identify color-coding safety standards.
6. Safely use hand tools and power equipment.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.
8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

07.02 DEMONSTRATE INTERPERSONAL SKILLS AS THEY RELATE TO THE WORKPLACE-- The student will be able to:

1. Perform roles in a student personnel system or in the Idaho Technology Student Association (ID-TSA).
2. Participate as a member of a team.
3. Teach others new skills.
4. Identify skills needed to serve clients/customers.
5. Demonstrate leadership skills.
6. Describe strategies necessary for negotiating agreements.
7. Demonstrate the application of skills necessary to work with people of diverse backgrounds.
8. Form an understanding and appreciation for work after listening to or observing technology workers.
9. Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
10. Form an understanding and appreciation for the roles and work of co-workers.

07.03 IDENTIFY AND APPLY METHODS OF INFORMATION ACQUISITION AND UTILIZATION-

The student will be able to:

1. Define terms related to computers.
2. Identify and describe methods of information acquisition and evaluation.
3. Discuss advantages and disadvantages in the application of technologies.
4. Produce a plan to organize and maintain information relevant to emerging technologies.
5. Comprehend and communicate information relevant to emerging technologies.
6. Demonstrate the use of computers to process information.

07.04 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--
The student will be able to:

1. Identify and explain the main and subordinate ideas in a written work.
2. Distinguish different purposes and methods of writing, identify a writer's point of view and tone, and interpret a writer's meaning.
3. Define unfamiliar words by use of structural analysis, decoding, contextual clues, or by using a dictionary.
4. Distinguish fact from opinion.
5. Read critically by asking pertinent questions, by recognizing assumptions and implications, and by evaluating ideas.
6. Select, relate, and organize, ideas using outlining and/or graphic organizers and develop the ideas in coherent paragraphs.
7. Improve one's own writing by restructuring, correcting errors, and rewriting.
8. Gather and organize information from primary and secondary sources; write a report using this research; quote, paraphrase, and summarize accurately; and cite sources properly.
9. Vary one's writing style, including vocabulary and sentence structure, for different readers and purposes.
10. Write logical and understandable statements, or phrases, to accurately fill out commonly used forms.
11. Compose unified and coherent correspondence, directions, descriptions, explanations and reports.
12. Participate critically and constructively in the exchange of ideas, particularly during class discussions and conferences with instructors.
13. Conceive and develop ideas about a topic for the purpose of speaking to a group; choose and organize related ideas; present them clearly in Standard English; and evaluate similar presentations by others.
14. Use the mathematics of:
    - -integers, fractions, and decimals;
    - -ratios, proportions, and percentages;
    - -roots and powers;
    - -algebra;
    - -geometry.
15. Make estimates and approximations, and judge the reasonableness of a result.
16. Use elementary concepts of probability and statistics.

17. Draw, read, and analyze graphs, charts, and tables.

18. Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solutions of such questions through familiarity with laboratory and field work.
19. Organize and communicate the results obtained by observation and experimentation.
20. Apply the basic principles of biology, physics, and chemistry. (properties of matter; structure of compounds; concepts of motion; temperature, pressure and volume; work, power, force and energy; machines; human cell structure).
21. Identify problems rooted in basic biology, physics, or chemistry (effects of hazardous materials on health and safety, effects of drugs on health, trouble shooting problems on a machine).

07.05 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.
4. Document each step of the design/problem-solving process.
5. Demonstrate "Brainstorming" as a process to solve problems.
6. Define "critical thinking" and its value in the problem-solving process.

07.06 EXPRESS AN UNDERSTANDING OF TECHNOLOGICAL SYSTEMS AND THEIR COMPLEX INTERRELATIONSHIPS--
The student will be able to:

1. Demonstrate a knowledge of how social, organizational, and technological systems work.
2. Explore methods used to monitor and correct performance of technological systems.
3. Design and implement an optimal solution to a given problem.
4. Outline major historical technological developments or events.
5. Identify recent advances in technology.
6. Explain problem-solving roles of technology.
7. Forecast a technological development or event.
8. Define technology.

07.07 DEMONSTRATE THE ABILITY TO PROPERLY IDENTIFY, ORGANIZE, PLAN, AND ALLOCATE RESOURCES--
The student will be able to:

1. Demonstrate the ability to select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
2. Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
3. Demonstrate the ability to acquire, store, allocate, and use materials or space efficiently.
4. Display a knowledge of the efficient use of human resources.

07.08 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--
The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore careers within specific areas of interest.

07.09 DEMONSTRATE EMPLOYABILITY SKILLS AND HABITS--
The student will be able to:

1. Identify employment opportunities.
2. Apply employment seeking skills.
3. Interpret employment capabilities.
4. Demonstrate appropriate work behavior.
5. Maintain safe and healthy environment.
6. Maintain businesslike image.
7. Maintain working relationships with others.
8. Communicate on the job.
9. Adapt to change.
10. Demonstrate a knowledge of manufacturing.
11. Perform mathematical calculations.
12. Compile a portfolio.

07.10 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP--
The student will be able to:

1. Define entrepreneurship.
2. Describe the importance of entrepreneurship to the American economy.
3. List the advantages and disadvantages of business ownership.
4. Identify the risks involved in ownership of a business.
5. Identify the necessary personal characteristics of a successful entrepreneur.
6. Identify the business skills needed to operate a small business efficiently and effectively.

07.11 MAKE AN INFORMED AND MEANINGFUL CAREER CHOICE--
The student will be able to:

1. Make a tentative occupational choice based on the information learned and interest developed in this course.
2. Review tentative occupational choices based on the information learned and interest developed in this course.

07.12 DEMONSTRATE TECHNOLOGICAL LITERACY ABOUT CONSTRUCTION SYSTEMS--
The student will be able to:

1. Define construction technology.
2. Outline major technological developments and events in the history of construction systems technology.
3. Identify recent advances in construction technology.
4. Forecast a development or event in construction technology.

07.13 EXHIBIT POSITIVE HUMAN RELATIONS AND LEADERSHIP SKILLS--
The student will be able to:

1. Perform roles in a student personnel system or in the Idaho Technology Student Association (ID-TSA).
2. Work cooperatively with others.

07.14 DEMONSTRATE COMPUTER APPLICATION AND LITERACY--
The student will be able to:

1. Define terms related to computer parts and usage.
2. List ways in which computers are used in technology.
3. Discuss advantages and disadvantages in the use of computers.
4. Demonstrate the application of a computer.

07.15 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.

07.16 DEMONSTRATE TECHNOLOGICAL LITERACY--
The student will be able to:

1. Outline major historical technological developments or events.
2. Identify recent advances in technology.
3. Explain problem-solving roles of technology.
4. Forecast a technological decision.
5. Make a technological decision.
6. Define technology.

07.17 DISPLAY AN UNDERSTANDING AND APPRECIATION FOR THE DIGNITY AND WORTH OF HONEST LABOR--
The student will be able to:

1. Form an understanding and appreciation for work after listening to or observing technology workers.
2. Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.

3. Form an understanding and appreciation for the roles and work of co-workers.

07.18 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--
The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore careers within specific areas of interest.

07.19 DEMONSTRATE EVOLVING CONSTRUCTION TECHNOLOGIES--
The student will be able to:

1. List evolving technologies in construction.
2. Demonstrate evolving technology in construction, i.e. 1) modular, 2) geodesic dome, 3) manufactured, 4) non-combustible.

07.20 PERFORM SPECIAL SKILLS UNIQUE TO CONSTRUCTION TECHNOLOGY--
The student will be able to:

1. Interpret construction plans and blueprints.
2. Identify construction materials.
3. Apply carpentry skills.
4. Apply plumbing skills.
5. Apply electrical wiring skills.
6. Apply masonry skills.
7. Describe or demonstrate the construction skills of plastering, roofing, and finishing.

07.21 EXPRESS A KNOWLEDGE OF FACTORS THAT IMPACT ON CONSTRUCTION TECHNOLOGY AND PRACTICES--
The student will be able to:

1. Explain economic factors that impact on construction technology.
2. Research and identify types and styles of construction desired by consumers.
3. List sources of raw materials and standard stock materials available to construction technology.
4. Express a knowledge of construction technology labor organizations and hiring practices.

07.22 LIST REQUISITES AND CAREER OPPORTUNITIES FOR EMPLOYMENT IN CONSTRUCTION TECHNOLOGY--
The student will be able to:

1. List occupations, job requirements, and employment opportunities in construction technology.
2. List occupational training programs and academic programs and academic programs at the postsecondary levels in construction technologies.

07.23 DEMONSTRATE WORK COMMON TO RESIDENTIAL, COMMERCIAL AND CIVIL CONSTRUCTION TECHNOLOGY--
The student will be able to:

1. Identify kinds of work related to construction technologies.
2. Demonstrate semi-skilled, skilled, and professional levels of work in construction technology.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Construction Systems II

IDAHO CODE NUMBER: TE 1921

08.01 Demonstrate the ability to work safely with a variety of technologies.

08.02 Demonstrate interpersonal skills as they relate to the workplace.

08.03 Identify and apply methods of information acquisition and utilization.

08.04 Apply basic skills in communications, mathematics, and science appropriate to technological content and learning activities.

08.05 Demonstrate and apply design/problem-solving processes.

08.06 Express an understanding of technological systems and their complex interrelationships.

08.07 Demonstrate the ability to properly identify, organize, plan, and allocate resources.

08.08 Discuss individual interests and aptitudes as they relate to a career choice.

08.09 Demonstrate employability skills and habits.

08.10 Demonstrate an understanding of entrepreneurship.

08.11 Apply advanced technical knowledge and skills about construction technology.

08.12 Demonstrate technical knowledge and skills about selecting and preparing a construction site.

08.13 Demonstrate technical knowledge and skills about designing and engineering constructed works.

08.14 Demonstrate technical knowledge and skills about contracting, estimating, bidding, and scheduling.

08.15 Demonstrate technical knowledge and skills about constructing substructures.

08.16 Demonstrate technical knowledge and skills about constructing superstructures.

08.17 Demonstrate technical knowledge and skills about installing utilities.

08.18 Demonstrate technical knowledge and skills about enclosing superstructures.

08.19 Demonstrate technical knowledge and skills about interior and exterior finishing of a constructed structure.

08.20 Perform advanced study and technical skills related to construction technology.

08.21 Operate a computer utilizing a program related to construction technology.

08.22 Demonstrate technical knowledge and skills about regional planning and the construction of civil or community structures.

08.23 Conduct structural tests on constructed structures and construction materials.

08.24 Conduct a research and experimentation project on a construction technology process or material.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Construction Systems II

IDAHO CODE NUMBER: TE 1921

08.01 DEMONSTRATE THE ABILITY TO WORK SAFELY WITH A VARIETY OF TECHNOLOGIES--
The student will be able to:

1. Select appropriate tools, procedures, and/or equipment needed to produce a product.
2. Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment needed to produce a product.
3. Demonstrate knowledge required to maintain and troubleshoot equipment used in a variety of technological systems.
4. Demonstrate laboratory safety rules and procedures.
5. Demonstrate good housekeeping at work station within total laboratory.
6. Identify color-coding safety standards.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.
8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

08.02 DEMONSTRATE INTERPERSONAL SKILLS AS THEY RELATE TO THE WORKPLACE--
The student will be able to:

1. Perform roles in a student personnel system or in the Technology Student Association (TSA).
2. Participate as a member of a team.
3. Teach others new skills.
4. Identify skills needed to serve clients/customers.
5. Demonstrate leadership skills.
6. Describe strategies necessary for negotiating agreements.
7. Demonstrate the application of skills necessary to work with people of diverse backgrounds.
8. Form an understanding and appreciation for work after listening to or observing technology workers.
9. Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
10. Form an understanding and appreciation for the roles and work of co-workers.

08.03 IDENTIFY AND APPLY METHODS OF INFORMATION ACQUISITION AND UTILIZATION-

The student will be able to:

1. Define terms related to computers.
2. Identify and describe methods of information acquisition and evaluation.
3. Discuss advantages and disadvantages in the application of technologies.
4. Produce a plan to organize and maintain information relevant to emerging technologies.
5. Comprehend and communicate information relevant to emerging technologies.
6. Demonstrate the use of computers to process information.

08.04 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--
The student will be able to:

1. Use the features of books and reference materials, such as table of contents, preface, introduction, titles and subtitles, index, glossary, appendix, and bibliography.
2. Read and follow complex written directions.
3. Find, understand, and apply information from a variety of sources (books, manuals, newspapers, periodicals, directories, reference works, computer printouts, and other printed matter or electronic sources such as video display terminals).
4. Use and expand general and specialized vocabulary (including abbreviations, acronyms, and concepts) as appropriate to subject areas studied at the grade level.
5. Write Standard English sentences with correct:
   - sentence structure;
   - verb forms;
   - punctuation, capitalization, possessives, plural forms, and other matters of mechanics;
   - word choice and spelling.
6. Answer and ask questions coherently and concisely, and follow spoken instructions.
7. Identify and comprehend the main and subordinate ideas in lectures and discussions, ask questions to clarify information heard, and report accurately what others have said.
8. Perform with accuracy the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals, and integers.
9. Make and use measurements in both traditional and metric units.
10. Formulate and solve problems in mathematical terms, selecting appropriate approaches and tools (mental computation, trial and error, paper-and-pencil techniques, calculator, and computer).
11. Solve work-related problems involving the basic arithmetic operations using whole numbers, fractions, decimals, and percents.
12. Describe the role of observation and experimentation in the development of scientific theories.

13. Gather scientific information through skills in laboratory, field, and library work.
14. Draw conclusions or make inferences from data.
15. Apply basic scientific/technical solutions to the appropriate problems.

08.05 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.
4. Document each step of the design/problem-solving process.
5. Demonstrate "Brainstorming" as a process to solve problems.
6. Define "critical thinking" and its value in the problem-solving process.

08.06 EXPRESS AN UNDERSTANDING OF TECHNOLOGICAL SYSTEMS AND THEIR COMPLEX INTERRELATIONSHIPS--
The student will be able to:

1. Demonstrate a knowledge of how social, organizational, and technological systems work.
2. Explore methods used to monitor and correct performance of technological systems.
3. Design and implement an optimal solution to a given problem.
4. Outline major historical technological developments or events.
5. Identify recent advances in technology.
6. Explain problem-solving roles of technology.
7. Forecast a technological development or event.
8. Define technology.

08.07 DEMONSTRATE THE ABILITY TO PROPERLY IDENTIFY, ORGANIZE, PLAN, AND ALLOCATE RESOURCES--
The student will be able to:

1. Demonstrate the ability to select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
2. Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
3. Demonstrate the ability to acquire, store, allocate, and use materials or space efficiently.
4. Display a knowledge of the efficient use of human resources.

08.08 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER CHOICE--
The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore careers within specific areas of interest.
5. Make a tentative occupational choice based on the information learned and interest developed in this course.
6. Review tentative occupational choices based on the information learned and interest developed in this course.

08.09 DEMONSTRATE EMPLOYABILITY SKILLS AND HABITS--
The student will be able to:

1. Identify employment opportunities.
2. Apply employment seeking skills.
3. Interpret employment capabilities.
4. Demonstrate appropriate work behavior.
5. Maintain safe and healthy environment.
6. Maintain businesslike image.
7. Maintain working relationships with others.
8. Communicate on the job.
9. Adapt to change.
10. Demonstrate a knowledge of manufacturing.
11. Perform mathematical calculations.
12. Compile a portfolio.

08.10 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP--
The student will be able to:

1. Define entrepreneurship.
2. Describe the importance of entrepreneurship to the American economy.
3. List the advantages and disadvantages of business ownership.
4. Identify the risks involved in ownership of a business.
5. Identify the necessary personal characteristics of a successful entrepreneur.
6. Identify the business skills needed to operate a small business efficiently and effectively.

08.11 APPLY ADVANCED TECHNICAL KNOWLEDGE AND SKILLS ABOUT CONSTRUCTION TECHNOLOGY--
The student will be able to:

1. Apply advanced technical knowledge and skills about student performance standards.
2. Apply advanced technical knowledge and skills in the construction of a structure.

08.12 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT SELECTING AND PREPARING A CONSTRUCTION SITE--
The student will be able to:

1. Explain the steps and processes for identifying, negotiating, selecting, and acquiring sites for construction.
2. Explain and perform the elementary technical skills for surveying or mapping a construction site.
3. Describe the tools, equipment, and technical skills required for excavating a construction site.
4. Explain the load bearing importance of the earth and the reason for soils testing at a construction site.

08.13 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT DESIGNING AND ENGINEERING CONSTRUCTED WORKS--
The student will be able to:

1. Read and interpret architectural drawings, blueprints, symbols, and construction plans.
2. Describe building codes, permits, and inspection requirements.
3. Sketch or draw a plan for a construction project.

08.14 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT CONTRACTING, ESTIMATING, BIDDING, AND SCHEDULING--
The student will be able to:

1. Estimate construction costs using various methods including a computer.
2. Read and prepare bid invitations for contractors to build a construction project.
3. Establish criteria for awarding a construction contract.
4. Describe the content of a construction contract and performance bond.

08.15 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT CONSTRUCTING SUBSTRUCTURES--
The student will be able to:

1. Describe the types, parts, and purposes of foundations.
2. Describe the tools, materials, and processes for setting foundations.
3. Mix, place, and finish concrete for a floor, wall, or footing.
4. Perform the masonry technical skills of laying brick or block.

08.16 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT CONSTRUCTING SUPERSTRUCTURES--
The student will be able to:

1. Describe mass, solid wall, frame, and air-supported superstructures.
2. Describe the materials used in the construction of superstructures.
3. Use technical carpentry skills, tools, and materials in constructing a wood frame superstructure.
4. Use technical construction skills in building a steel or concrete frame superstructure.
5. Describe factory manufacturing of superstructures and modules.

08.17 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT INSTALLING UTILITIES--
The student will be able to:

1. Describe public utility systems for supplying water, electricity, natural gas, and sewerage.
2. Describe the functions and operation of heating, cooling, and ventilating systems.
3. Demonstrate a technical knowledge of plumbing and electrical systems in homes or buildings including home automation and security controls.

4. Use the technical tools and skills to install plumbing and electrical systems utilities.
5. Diagnose and troubleshoot problems with utility systems.

08.18 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT ENCLOSING SUPERSTRUCTURES--
The student will be able to:

1. Describe the different types of materials and methods for constructing interior and exterior walls.
2. Describe the different types of materials and methods for laying floors and for building roofs.
3. Describe the different types of methods for constructing or installing windows and doors.
4. Describe the purposes, materials, and methods for insulating enclosed superstructures.
5. Perform the technical skills of enclosing a superstructure.

08.19 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT INTERIOR AND EXTERIOR FINISHING OF A CONSTRUCTED STRUCTURE--
The student will be able to:

1. Describe the different types of materials and methods for trimming, painting, and decorating a constructed structure.
2. Describe the types of accessories and fixtures that are installed to finish completed construction.
3. Explain the materials and methods used for the finishing processes of paving and landscaping.
4. Participate in processes of finishing a construction project and site.

08.20 PERFORM ADVANCED STUDY AND TECHNICAL SKILLS RELATED TO CONSTRUCTION TECHNOLOGY--
The student will be able to:

1. Select an individual or group project in cooperation with the teacher.
2. Develop a written plan of work to carry out the project.
3. Show evidence of technical study in support of the project.
4. Perform skills related to the project.
5. Complete the project as planned.

08.21 OPERATE A COMPUTER UTILIZING A PROGRAM RELATED TO CONSTRUCTION TECHNOLOGY--
The student will be able to:

1. Collect or produce data on construction technology through the operation of a computer.
2. Estimate construction costs using computer software.
3. Design a structure plan using CAD software.

08.22 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT REGIONAL PLANNING AND THE CONSTRUCTION OF CIVIL OR COMMUNITY STRUCTURES--
The student will be able to:

1. Discuss community and regional planning needs and processes for the construction of roads, parks, dams, airports, seaports, warehouses, shopping centers, factories, and skyscrapers.
2. Develop a scale model of one of the above structures and give a report on the need.

08.23 CONDUCT STRUCTURAL TESTS ON CONSTRUCTED STRUCTURES AND CONSTRUCTION MATERIALS--
The student will be able to:

1. Perform scientific and technical tests on the strength, life, and uses of structures.
2. Perform scientific and technical tests on a variety of construction materials.

08.24 CONDUCT A RESEARCH AND EXPERIMENTATION PROJECT ON A CONSTRUCTION TECHNOLOGY MATERIAL OR PROCESS--
The student will be able to:

1. Identify a problem.
2. State a need to research the problem.
3. Form a hypothesis about the problem.
4. Plan the procedures for researching the problem.
5. Conduct the research following the planned procedures.
6. Present the research findings in a seminar.
7. State conclusions based on the research findings.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Power/Energy and Transportation Systems I

IDAHO CODE NUMBER: TE 1940

09.01 Demonstrate the ability to work safely with a variety of technologies.

09.02 Demonstrate interpersonal skills as they relate to the workplace.

09.03 Identify and apply methods of information acquisition and utilization.

09.04 Apply basic skills in communications, mathematics, and science appropriate to technological content and learning activities.

09.05 Demonstrate and apply design/problem-solving processes.

09.06 Discuss individual interests and aptitudes as they relate to a career.

09.07 Make an informed and meaningful career choice.

09.08 Demonstrate technical knowledge and skills about energy technology.

09.09 Demonstrate technical knowledge and skills about power technology.

09.10 Demonstrate technical knowledge and skills about transportation technology.

09.11 Perform independent-study and technical skills related to energy, power, or transportation technology.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Power/Energy and Transportation Systems I

IDAHO CODE NUMBER: TE 1940

09.01 DEMONSTRATE THE ABILITY TO WORK SAFELY WITH A VARIETY OF TECHNOLOGIES--

The student will be able to:

1. Select appropriate tools, procedures, and/or equipment needed to produce a product.
2. Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment needed to produce a product.
3. Demonstrate knowledge required to maintain and troubleshoot equipment used in a variety of technological systems.
4. Follow laboratory safety rules and procedures.
5. Demonstrate good housekeeping at work station within total laboratory.
6. Identify color-coding safety standards.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.
8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

09.02 DEMONSTRATE INTERPERSONAL SKILLS AS THEY RELATE TO THE WORKPLACE--

The student will be able to:

1. Perform roles in a student personnel system or in the Idaho Technology Student Association (ID-TSA).
2. Participate as a member of a team.
3. Teach others new skills.
4. Identify skills needed to serve clients/customers.
5. Demonstrate leadership skills.
6. Describe strategies necessary for negotiating agreements.
7. Demonstrate the application of skills necessary to work with people of diverse backgrounds.
8. Form an understanding and appreciation for work after listening to or observing technology workers.
9. Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
10. Form an understanding and appreciation for the roles and work of co-workers.

09.03 IDENTIFY AND APPLY METHODS OF INFORMATION ACQUISITION AND UTILIZATION-

The student will be able to:

1. Define terms related to computers.
2. Identify and describe methods of information acquisition and evaluation.
3. Discuss advantages and disadvantages in the application of technologies.
4. Produce a plan to organize and maintain information relevant to emerging technologies.
5. Comprehend and communicate information relevant to emerging technologies.
6. Demonstrate the use of computers to process information.
7. Demonstrate the ability to gather information using media centers, electronic communications (i.e. computer networking) and emerging media (CD-ROM, laser disk, etc.)

09.04 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--
The student will be able to:

1. Identify and explain the main and subordinate ideas in a written work.
2. Distinguish different purposes and methods of writing, identify a writer's point of view and tone, and interpret a writer's meaning.
3. Define unfamiliar words by use of structural analysis, decoding, contextual clues, or by using a dictionary.
4. Distinguish fact from opinion.
5. Read critically by asking pertinent questions, by recognizing assumptions and implications, and by evaluating ideas.
6. Select, relate, and organize, ideas using outlining and/or graphic organizers and develop the ideas in coherent paragraphs.
7. Improve one's own writing by restructuring, correcting errors, and rewriting.
8. Gather and organize information from primary and secondary sources; write a report using this research; quote, paraphrase, and summarize accurately; and cite sources properly.
9. Vary one's writing style, including vocabulary and sentence structure, for different readers and purposes.
10. Write logical and understandable statements, or phrases, to accurately fill out commonly used forms.
11. Compose unified and coherent correspondence, directions, descriptions, explanations and reports.
12. Participate critically and constructively in the exchange of ideas, particularly during class discussions and conferences with instructors.
13. Conceive and develop ideas about a topic for the purpose of speaking to a group; choose and organize related ideas; present them clearly in Standard English; and evaluate similar presentations by others.
14. Use the mathematics of:
    - -integers, fractions, and decimals;
    - -ratios, proportions, and percentages;
    - -roots and powers;
    - -algebra;

-geometry.

15. Make estimates and approximations, and judge the reasonableness of a result.
16. Use elementary concepts of probability and statistics.
17. Draw, read, and analyze graphs, charts, and tables.
18. Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solutions of such questions through familiarity with laboratory and field work.
19. Organize and communicate the results obtained by observation and experimentation.
20. Apply the basic principles of biology, physics, and chemistry. (Properties of matter; structure of compounds; concepts of motion; temperature, pressure and volume; work, power, force and energy; machines; human cell structure).
21. Identify problems rooted in basic biology, physics, or chemistry (effects of hazardous materials on health and safety, effects of drugs on health, trouble shooting problems on a machine).

09.05 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.
4. Document each step of the design/problem-solving process.
5. Demonstrate "Brainstorming" as a process to solve problems.
6. Define "critical thinking" and its value in the problem-solving process.

09.06 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--
The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore careers within specific areas of interest.

09.07 MAKE AN INFORMED AND MEANINGFUL CAREER CHOICE--
The student will be able to:

1. Make a tentative occupational choice based on the information learned and interest developed in this course.
2. Review tentative occupational choices based on the information learned and interest developed in this course.

09.08 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT ENERGY TECHNOLOGY--

The student will be able to:

1. Demonstrate knowledge and understanding of sources of thermal energy.
2. Demonstrate knowledge and understanding of sources of radiant energy.
3. Demonstrate knowledge and understanding of sources of nuclear energy.
4. Demonstrate knowledge and understanding of sources of chemical energy.
5. Demonstrate knowledge and understanding of sources of electrical energy.
6. Demonstrate knowledge and understanding of sources of mechanical energy.
7. Demonstrate knowledge and understanding of sources of fluid energy.
8. Define Energy
9. Be able to use units of energy measurement to calculate input and output.
10. Be able to apply knowledge of energy technology in making a working system.

09.09 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT POWER TECHNOLOGY--

The student will be able to:

1. Define Power
2. Demonstrate method of measuring power
3. Demonstrate knowledge, understanding and application of simple machines.
4. Calculate problems using power ratio.
5. Demonstrate an understanding of hydraulic/pneumatic power control
6. Set up and Calculate power problems.
7. Demonstrate knowledge and applications in controlling power. Electricity/Electronics - AC/DC, Components, Digital electronics/logic circuits, Hydraulic/pneumatic, Mechanical
8. Identify methods of power transmission.
9. Demonstrate knowledge and understand of heat engines, their parts and operation
10. Students will be able to solve problems using more than one method of power control.

09.10 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT TRANSPORTATION TECHNOLOGY--

The student will be able to:

1. Understand historical development of each transportation system.
2. Understand and apply the theories of each transportation system in developing efficient working models.
3. Design and construct vehicles in each transportation system.
4. Demonstrate knowledge of land transportation.
5. Demonstrate knowledge of ground effect transportation.
6. Demonstrate knowledge of air transportation.
7. Demonstrate knowledge of space transportation.
8. Demonstrate knowledge of marine transportation.
9. Illustrate or design an intermodal transportation system.

09.11 PERFORM INDEPENDENT-STUDY AND TECHNICAL SKILLS RELATED TO ENERGY, POWER, OR TRANSPORTATION TECHNOLOGY--
The student will be able to:

1. Select an individual or group project in cooperation with the teacher.
2. Work with a mentor from the school or community to help complete the project.
3. Develop a written plan of work to carry out the project.
4. Show evidence of technical study in support of the project.
5. Perform skills related to the project.
6. Complete the project as planned.
7. Collect or produce data on energy and power through the operation of computer.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Power/Energy and Transportation Systems II

IDAHO CODE NUMBER: TE 1941

10.01 Express an understanding of technological systems and their complex interrelationships.

10.02 Measure and report the power and efficiency of power producing systems.

10.03 Demonstrate the ability to properly identify, organize, plan, and allocate resources.

10.04 Apply basic skills in communications, mathematics, and science appropriate to technological content and learning activities.

10.05 Demonstrate an understanding of entrepreneurship.

10.06 Demonstrate technical knowledge and skills about steam power technology.

10.07 Demonstrate technical knowledge and skills about diesel engine power technology.

10.08 Demonstrate technical knowledge and skills about internal combustion power technology.

10.09 Demonstrate technical knowledge and skills about hydraulic and pneumatic power technology.

10.10 Demonstrate technical knowledge and skills about electric power technology.

10.11 Demonstrate technical knowledge and skills about jet engine power technology.

10.12 Demonstrate technical knowledge and skills about rocket engine technology.

10.13 Demonstrate technical knowledge and skills about solar cells and fuel cells.

10.14 Demonstrate technical knowledge and skills about nuclear power technology.

10.15 Perform independent advanced-study and technical skills related to energy, power, or transportation technology.

10.16 Demonstrate technical knowledge and skills about powered transportation systems.

10.17 Conduct a research and experimentation project on an energy and power system.

10.18 Demonstrate knowledge of history of flight.

10.19 Demonstrate knowledge of principles of flight.

10.20 Demonstrate knowledge of aerospace vehicles, difference of aircraft and vehicles.

10.21 Demonstrate knowledge of aerospace environments.

10.22 Demonstrate knowledge of aerospace and international issues.

10.23 Demonstrate knowledge of the future of aerospace.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Power/Energy and Transportation Systems II

IDAHO CODE NUMBER: TE 1941

10.01 EXPRESS AN UNDERSTANDING OF TECHNOLOGICAL SYSTEMS AND THEIR COMPLEX INTERRELATIONSHIPS--
The student will be able to:

1. Demonstrate a knowledge of how social, organizational, and technological systems work.
2. Explore methods used to monitor and correct performance of technological systems.
3. Design and implement an optimal solution to a given problem.
4. Outline major historical technological developments or events.
5. Identify recent advances in technology.
6. Explain problem-solving roles of technology.
7. Forecast a technological development or event.
8. Define technology.

10.02 MEASURE AND REPORT THE POWER AND EFFICIENCY OF POWER PRODUCING SYSTEMS--
The student will be able to:

1. Measure the power and efficiency of a mechanical system.
2. Measure the power and efficiency of a fluid system.
3. Measure the power and efficiency of an electrical system.
4. Measure the power and efficiency of a thermal system.

10.03 DEMONSTRATE THE ABILITY TO PROPERLY IDENTIFY, ORGANIZE, PLAN, AND ALLOCATE RESOURCES--
The student will be able to:

1. Demonstrate the ability to select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
2. Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
3. Demonstrate the ability to acquire, store, allocate, and use materials or space efficiently.
4. Display a knowledge of the efficient use of human resources.

10.04 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--
The student will be able to:

1. Use the features of books and reference materials, such as table of contents, preface, introduction, titles and subtitles, index, glossary, appendix, and bibliography.
2. Read and follow complex written directions.
3. Find, understand, and apply information from a variety of sources (books, manuals, newspapers, periodicals, directories, reference works, computer printouts, and other printed matter or electronic sources such as video display terminals).
4. Use and expand general and specialized vocabulary (including abbreviations, acronyms, and concepts) as appropriate to subject areas studied at the grade level.
5. Write Standard English sentences with correct:
   - sentence structure;
   - verb forms;
   - punctuation, capitalization, possessives, plural forms, and other matters of mechanics;
   - word choice and spelling.
6. Answer and ask questions coherently and concisely, and follow spoken instructions.
7. Identify and comprehend the main and subordinate ideas in lectures and discussions, ask questions to clarify information heard, and report accurately what others have said.
8. Perform with accuracy the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals, and integers.
9. Make and use measurements in both traditional and metric units.
10. Formulate and solve problems in mathematical terms, selecting appropriate approaches and tools (mental computation, trial and error, paper-and-pencil techniques, calculator, and computer).
11. Solve work-related problems involving the basic arithmetic operations using whole numbers, fractions, decimals, and percents.
12. Describe the role of observation and experimentation in the development of scientific theories.
13. Gather scientific information through skills in laboratory, field, and library work.
14. Draw conclusions or make inferences from data.
15. Apply basic scientific/technical solutions to the appropriate problems.

10.05 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP--
The student will be able to:

1. Define entrepreneurship.
2. Describe the importance of entrepreneurship to the American economy.
3. List the advantages and disadvantages of business ownership.
4. Identify the risks involved in ownership of a business.
5. Identify the necessary personal characteristics of a successful entrepreneur.

6. Identify the business skills needed to operate a small business efficiently and effectively.

10.06 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT STEAM POWER TECHNOLOGY--
The student will be able to:

1. Identify and define the key terms, categories, and parts of steam power technology.
2. Describe the operating theory and principles of steam engines and steam turbines.
3. Explain the uses and applications of steam power engines and systems.
4. Identify industries that produce and use steam power systems.
5. Describe energy and fuel sources for steam power operations.
6. Perform technical skills in building, assembling, maintaining, or operating a steam power system.

10.07 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT DIESEL ENGINE POWER TECHNOLOGY--
The student will be able to:

1. Identify and define key terms, categories, and parts of diesel engine power technology.
2. Describe the operating theory and principles of diesel engine power technology.
3. Explain the uses and applications of diesel engines.
4. Identify industries that produce and use diesel engines.
5. Describe energy and fuel sources for diesel engines.
6. Perform technical skills in building, assembling, maintaining, or operating diesel engines.

10.08 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT INTERNAL COMBUSTION POWER TECHNOLOGY--
The student will be able to:

1. Identify and define the key terms, categories, and parts of gasoline engine internal combustion technology.
2. Describe the operating theory and principles of internal combustion gasoline engines.
3. Explain the uses and applications of internal combustion gasoline engines.
4. Identify industries that produce and use internal combustion gasoline engines.
5. Describe energy and fuel sources for internal combustion gasoline engines.
6. Perform technical skills in building, assembling, maintaining, or operating internal combustion gasoline engines.

10.09 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT HYDRAULIC AND PNEUMATIC POWER TECHNOLOGY--
The student will be able to:

1. Identify and define key terms, categories, and parts of hydraulic and pneumatic power technology.
2. Describe the operating theory and principles of hydraulic and pneumatic power technology.
3. Explain the uses and applications of hydraulic and pneumatic power systems.
4. Identify industries that produce and use hydraulic and pneumatic power systems.
5. Describe the energy sources for hydraulic and pneumatic power systems.
6. Perform technical skills in building, assembling, maintaining, or operating hydraulic and pneumatic power systems.

10.10 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT ELECTRIC POWER TECHNOLOGY--
The student will be able to:

1. Identify and define the key terms, categories, and parts of electric power technology.
2. Describe the operating theory and principles of electric power systems.
3. Explain the uses and applications of electric power systems.
4. Identify industries that produce and use electric power systems.
5. Describe energy and fuel sources for electric power systems.
6. Perform technical skills in building, assembling, maintaining, or operating an electric power system.

10.11 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT JET ENGINE POWER TECHNOLOGY--
The student will be able to:

1. Identify and define key terms, categories, and parts of jet engine power technology.
2. Describe the operating theory and principles of jet engine power technology.
3. Explain the uses and applications of jet engines.
4. Identify industries that produce and use jet engines.
5. Describe energy and fuel sources for jet engines.
6. Perform technical skills in building, assembling, maintaining, or operating jet engines.

10.12 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT ROCKET ENGINE POWER TECHNOLOGY--
The student will be able to:

1. Identify and define key terms, categories, and parts of rocket engine power technology.
2. Describe the operating theory and principles of rocket engine power technology.
3. Explain the uses and applications of rocket engines.
4. Identify industries that produce and use rocket engines.
5. Describe energy and fuel sources for rocket engines.
6. Perform technical skills in building, assembling, maintaining, or operating rocket engines.

10.13 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT SOLAR CELLS AND FUEL CELLS--
The student will be able to:

1. Identify and define key terms, categories, and parts of solar cell and fuel cell power technology.
2. Describe the operating theory and principles of solar cell and fuel cell power technology.
3. Explain the uses and applications of solar cell and fuel cell power technology.
4. Identify the industries that produce and use solar cell and fuel cell power systems.
5. Describe the energy and fuel sources for solar cell and fuel cell power systems.
6. Perform technical skills in building, assembling, maintaining, or operating solar cell or fuel cell systems.

10.14 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT NUCLEAR POWER TECHNOLOGY--
The student will be able to:

1. Identify and define the key terms, categories, and parts of nuclear power technology.
2. Describe the operating theory and principles of nuclear power systems.
3. Explain the uses and applications of nuclear power systems.
4. Identify industries that produce and use nuclear power systems.
5. Describe energy and fuel sources for nuclear power systems.
6. Perform technical skills in building, assembling, maintaining, or operating a simulated or real nuclear power system.

10.15 PERFORM INDEPENDENT ADVANCED-STUDY AND TECHNICAL SKILLS RELATED TO ENERGY, POWER, OR TRANSPORTATION TECHNOLOGY--
The student will be able to:

1. Select an individual or group project in cooperation with the teacher.
2. Work with a mentor from the school or community to help complete the project.
3. Develop a written plan of work to carry out the project.
4. Show evidence of technical study in support of the project.
5. Perform skills related to the project.
6. Complete the project as planned.
7. Collect or produce data on energy and power through the operation of a computer.

10.16 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS ABOUT POWERED TRANSPORTATION SYSTEMS--
The student will be able to:

1. Identify and define key terms, categories, and parts of land, water, air, and space transportation systems.
2. Describe the theories and operating principles of land, water, air, and space transportation.

3. Explain the uses and applications of land, water, air and space transportation vehicles.
4. Identify industries that produce and use land, water, air, and space transportation vehicles.
5. Describe the energy and power systems used in land, water, air, and space vehicles.
6. Perform technical skills in building, assembling, servicing, or operating a complete transportation vehicle.
7. Demonstrate knowledge of the future of land, ground effect, air, water, and space modes of transportation.

10.17 CONDUCT A RESEARCH AND EXPERIMENTATION PROJECT ON AN ENERGY AND POWER SYSTEM--
The student will be able to:

1. Identify a problem.
2. State a need to research the problem.
3. Form a hypothesis about the problem.
4. Plan the procedures for researching the problem.
5. Conduct the research following the planned procedures.
6. Present the research findings in a seminar.
7. State conclusions based on the research findings.

10.18 DEMONSTRATE KNOWLEDGE OF HISTORY OF FLIGHT--
The student will be able to:

1. Investigate the evolution of flight technology.
2. Identify early flight attempts.
3. Study the effects of world issues on the development of flight.

10.19 DEMONSTRATE KNOWLEDGE OF PRINCIPLES OF FLIGHT--
The student will be able to:

1. Gain an understanding of basic aerodynamic principles.
2. Apply an understanding of aircraft motion and control.
3. Demonstrate the operations of Aircraft propulsion.
4. Demonstrate the principles of navigation in flight.

10.20 DEMONSTRATE KNOWLEDGE OF AEROSPACE VEHICLES, DIFFERENCE OF AIRCRAFT AND VEHICLES--
The student will be able to:

1. Identify each aerospace vehicle type and explain the properties of flight associated with each type.
2. Apply the principles of flight to each type of aerospace vehicle.

10.21 DEMONSTRATE KNOWLEDGE OF AEROSPACE ENVIRONMENTS--
The student will be able to:

1. Survey the Galactic Community.
2. Survey the Solar System.
3. Survey the Earth's atmosphere.
4. Analyze the effects space flight has on the human body.
5. Study the effects that Humans have on Space.

10.22 DEMONSTRATE KNOWLEDGE OF AEROSPACE AND INTERNATIONAL ISSUES--
The student will be able to:

1. Identify the effects of international issues on aerospace.
2. Evaluate the effects that aerospace has had on international issues; environment, world trade, government policies, etc.

10.23 DEMONSTRATE KNOWLEDGE OF THE FUTURE OF AEROSPACE--
The student will be able to:

1. Forecast possible advancements in prolonged space travel.
2. Forecast possible advancements in artificial environments.
3. Forecast possible advancements in space-related production technology.
4. Forecast possible advancements in biotechnology.
5. Forecast possible advancements in clothing.
6. Forecast possible advancements in entertainment and recreation.
7. Forecast possible advancements in transportation technology.
8. Describe present and future aerospace careers.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Emerging Technology Studies

IDAHO CODE NUMBER: TE 1926

11.01 Demonstrate the ability to work safely with a variety of technologies.

11.02 Demonstrate interpersonal skills as they relate to the workplace.

11.03 Identify and apply methods of information acquisition and utilization.

11.04 Apply basic skills in communications, mathematics, and science appropriate to technological content and learning activities.

11.05 Demonstrate and apply design/problem-solving processes.

11.06 Express an understanding of technological systems and their complex interrelationships.

11.07 Demonstrate the ability to properly identify, organize, plan, and allocate resources.

11.08 Discuss individual interests and aptitudes as they relate to a career.

11.09 Demonstrate employability skills and habits.

11.10 Demonstrate an understanding of entrepreneurship.

11.11 Make an informed and meaningful career choice.

11.12 Demonstrate and apply principles related to the following energy systems: fluid, thermal, electrical, and mechanical.

11.13 Communicate the results of experiments or research through oral, written or multimedia presentations.

11.14 Demonstrate graphical literacy and the use of graphical representations in analysis and design.

11.15 Describe the legal, social, ethical, and economic factors that influence a technology related topic or engineering design..

11.16 Discuss careers and practices related to emerging/engineering technology topics.

11.17 Demonstrate research techniques and engineering analysis/design methods.

11.18 Demonstrate the engineering design reporting process as a team effort.

11.19 Demonstrate and apply mechanical, fluid, electrical and thermal system principles.

11.20 Demonstrate a knowledge of materials and processes.

11.21 Use tools, machines, calculators, and computers necessary for obtaining solutions to design problems.

11.22 Describe the functional characteristics of the engineering design team.

11.23 Conduct a research, experimentation or design project related to engineering technology.

11.24 Contact and interview an expert in the field related to the chosen technology topic.

11.25 Utilize current technology to access information related to the chosen technology topic.

11.26 Model an idea using appropriate computer simulation software or scale modeling techniques.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Emerging Technology Studies

IDAHO CODE NUMBER: TE 1926

11.01 DEMONSTRATE THE ABILITY TO WORK SAFELY WITH A VARIETY OF TECHNOLOGIES--
The student will be able to:

1. Select appropriate tools, procedures, and/or equipment needed to produce a product.
2. Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment needed to produce a product.
3. Demonstrate knowledge required to maintain and troubleshoot equipment used in a variety of technological systems.
4. Follow laboratory safety rules and procedures.
5. Demonstrate good housekeeping at work station within total laboratory.
6. Identify color-coding safety standards.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.
8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

11.02 DEMONSTRATE INTERPERSONAL SKILLS AS THEY RELATE TO THE WORKPLACE--
The student will be able to:

1. Perform roles in a student personnel system or in the Idaho Technology Student Association (ID-TSA).
2. Participate as a member of a team.
3. Teach others new skills.
4. Identify skills needed to serve clients/customers.
5. Demonstrate leadership skills.
6. Describe strategies necessary for negotiating agreements.
7. Demonstrate the application of skills necessary to work with people of diverse backgrounds.
8. Form an understanding and appreciation for work after listening to or observing technology workers.
9. Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
10. Form an understanding and appreciation for the roles and work of co-workers.

11.03 IDENTIFY AND APPLY METHODS OF INFORMATION ACQUISITION AND UTILIZATION-

The student will be able to:

1. Define terms related to computers.
2. Identify and describe methods of information acquisition and evaluation.
3. Discuss advantages and disadvantages in the application of technologies.
4. Produce a plan to organize and maintain information relevant to emerging technologies.
5. Comprehend and communicate information relevant to emerging technologies.
6. Demonstrate the use of computers to process information.

11.04 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--
The student will be able to:

1. Identify and explain the main and subordinate ideas in a written work.
2. Distinguish different purposes and methods of writing, identify a writer's point of view and tone, and interpret a writer's meaning.
3. Define unfamiliar words by use of structural analysis, decoding, contextual clues, or by using a dictionary.
4. Distinguish fact from opinion.
5. Read critically by asking pertinent questions, by recognizing assumptions and implications, and by evaluating ideas.
6. Select, relate, and organize, ideas using outlining and/or graphic organizers and develop the ideas in coherent paragraphs.
7. Improve one's own writing by restructuring, correcting errors, and rewriting.
8. Gather and organize information from primary and secondary sources; write a report using this research; quote, paraphrase, and summarize accurately; and cite sources properly.
9. Vary one's writing style, including vocabulary and sentence structure, for different readers and purposes.
10. Write logical and understandable statements, or phrases, to accurately fill out commonly used forms.
11. Compose unified and coherent correspondence, directions, descriptions, explanations and reports.
12. Participate critically and constructively in the exchange of ideas, particularly during class discussions and conferences with instructors.
13. Conceive and develop ideas about a topic for the purpose of speaking to a group; choose and organize related ideas; present them clearly in Standard English; and evaluate similar presentations by others.
14. Use the mathematics of:
    - -integers, fractions, and decimals;
    - -ratios, proportions, and percentages;
    - -roots and powers;
    - -algebra;
    - -geometry.
15. Make estimates and approximations, and judge the reasonableness of a result.
16. Use elementary concepts of probability and statistics.

17. Draw, read, and analyze graphs, charts, and tables.

18. Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solutions of such questions through familiarity with laboratory and field work.
19. Organize and communicate the results obtained by observation and experimentation.
20. Apply the basic principles of biology, physics, and chemistry. (properties of matter; structure of compounds; concepts of motion; temperature, pressure and volume; work, power, force and energy; machines; human cell structure).
21. Identify problems rooted in basic biology, physics, or chemistry (effects of hazardous materials on health and safety, effects of drugs on health, trouble shooting problems on a machine).

11.05 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.
4. Document each step of the design/problem-solving process.
5. Demonstrate "Brainstorming" as a process to solve problems.
6. Define "critical thinking" and its value in the problem-solving process.

11.06 EXPRESS AN UNDERSTANDING OF TECHNOLOGICAL SYSTEMS AND THEIR COMPLEX INTERRELATIONSHIPS--
The student will be able to:

1. Demonstrate a knowledge of how social, organizational, and technological systems work.
2. Explore methods used to monitor and correct performance of technological systems.
3. Design and implement an optimal solution to a given problem.
4. Outline major historical technological developments or events.
5. Identify recent advances in technology.
6. Explain problem-solving roles of technology.
7. Forecast a technological development or event.
8. Define technology.

11.07 DEMONSTRATE THE ABILITY TO PROPERLY IDENTIFY, ORGANIZE, PLAN, AND ALLOCATE RESOURCES--
The student will be able to:

1. Demonstrate the ability to select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
2. Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
3. Demonstrate the ability to acquire, store, allocate, and use materials or space efficiently.
4. Display a knowledge of the efficient use of human resources.

11.08 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--
The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore careers within specific areas of interest.

11.09 DEMONSTRATE EMPLOYABILITY SKILLS AND HABITS--
The student will be able to:

1. Identify employment opportunities.
2. Apply employment seeking skills.
3. Interpret employment capabilities.
4. Demonstrate appropriate work behavior.
5. Maintain safe and healthy environment.
6. Maintain businesslike image.
7. Maintain working relationships with others.
8. Communicate on the job.
9. Adapt to change.
10. Demonstrate a knowledge of manufacturing.
11. Perform mathematical calculations.
12. Compile a portfolio.

11.10 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP--
The student will be able to:

1. Define entrepreneurship.
2. Describe the importance of entrepreneurship to the American economy.
3. List the advantages and disadvantages of business ownership.
4. Identify the risks involved in ownership of a business.
5. Identify the necessary personal characteristics of a successful entrepreneur.
6. Identify the business skills needed to operate a small business efficiently and effectively.

11.11 MAKE AN INFORMED AND MEANINGFUL CAREER CHOICE--
The student will be able to:

1. Make a tentative occupational choice based on the information learned and interest developed in this course.
2. Review tentative occupational choices based on the information learned and interest developed in this course.

11.12 DEMONSTRATE AND APPLY PRINCIPLES RELATED TO THE FOLLOWING ENERGY SYSTEMS: FLUID, THERMAL, ELECTRICAL, AND MECHANICAL--
The student will be able to:

1. Assemble, operate, and identify the parts of a system which demonstrates fluid system principles.
2. Demonstrate and apply principles of force, work, rate, resistance, energy, power, and force transformers relating to fluid systems.
3. Assemble, operate, and identify the parts of a system which demonstrates thermal system principles.
4. Demonstrate and apply principles of force, work, rate, resistance, energy, power, and force transformers relating to thermal systems.
5. Assemble, operate, and identify the parts of a system which demonstrates electrical system principles.
6. Demonstrate and apply principles of force, work, rate, resistance, energy, power, and force transformers relating to electrical systems.
7. Assemble, operate, and identify the parts of a system which demonstrates mechanical systems principles.
8. Demonstrate and apply principles of force, work, rate, resistance, energy, power, and force transformers relating to mechanical systems.

11.13 COMMUNICATE THE RESULTS OF EXPERIMENTS THROUGH RESEARCH, WRITTEN OR MULTIMEDIA PRESENTATIONS--
The student will be able to:

1. Understand and interpret basic engineering drawings.
2. Measure quantities and conduct basic tests according to published procedures.
3. Use precision measuring tools and instruments to layout, measure and inspect parts or articles.
4. Sketch objects using multi-view and pictorial principles.
5. Prepare drawings using basic technical drawing instruments for orthographic and isometric projections.
6. Use engineering design graphics and descriptive geometry in the solution of design problems.
7. Describe graphic communications principles.
8. Use current multimedia authoring software and hardware to produce a multimedia presentation of the project.

11.14 DEMONSTRATE GRAPHICAL LITERACY AND THE USE OF GRAPHICAL REPRESENTATIONS IN ANALYSIS AND DESIGN--
The student will be able to:

1. Identify the basic tools and instruments for engineering design graphics.
2. Express knowledge and basic theory in engineering design graphics.
3. Make a technological decision related to engineering design graphics.
4. Interpret engineering design graphics, using various systems of measurement.
5. Define and outline steps in the engineering design graphics process.

6. Describe the use of sketches and assembly drawings in the engineering design process.
7. Use engineering design graphics to describe the solution of an engineering problem.

11.15 DESCRIBE THE LEGAL, SOCIAL, ETHICAL, AND ECONOMIC FACTORS THAT INFLUENCE A TECHNOLOGY RELATED TOPIC OR ENGINEERING DESIGN--
The student will be able to:

1. Discuss the legal constraints placed on the practice of engineering.
2. Discuss the underlying principles of professional ethics.
3. Discuss the underlying principles of business (i.e., industrial) ethics.
4. Describe how economics and resource availability can influence design.
5. Explain the need and use of design standards.
6. Describe the legal protection afforded an inventor or designer.

11.16 DISCUSS CAREERS AND PRACTICES RELATED TO EMERGING/ENGINEERING TECHNOLOGY TOPICS--
The student will be able to:

1. Summarize the professional characteristics of engineers.
2. List the principal fields for specialization in engineering.
3. Describe the procedures for becoming a registered engineer in Idaho.
4. Describe the procedures for becoming a certified engineering technician.
5. Outline the typical steps to follow to prepare for a course of study leading to an engineering career.

11.17 DEMONSTRATE RESEARCH TECHNIQUES AND ENGINEERING ANALYSIS/DESIGN METHODS--
The student will be able to:

1. Define the terms: analysis, design, and application.
2. Define the experimental method as it is applied to design.
3. Describe methodology.
4. Describe simulation.
5. Prepare a model of a design solution to an engineering problem.
6. Prepare a graphical solution to an engineering problem.
7. Prepare a mathematical solution to an engineering problem (using either a calculator or computer).

11.18 DEMONSTRATE THE ENGINEERING DESIGN REPORTING PROCESS AS A TEAM EFFORT--
The student will be able to:

1. Research an engineering achievement and prepare a model, or display.
2. Deliver a short oral briefing which explains a technical device, process or achievement.
3. As a team, present a technical report on an engineering design problem, concept or issue.

11.19 DEMONSTRATE AND APPLY MECHANICAL, FLUID, ELECTRICAL AND THERMAL SYSTEM PRINCIPLES--
The student will be able to:

1. Demonstrate the design solution to a mechanical system problem.
2. Demonstrate the design solution to a fluid system problem.
3. Demonstrate the design solution to an electrical system problem.
4. Demonstrate the design solution to a thermal system problem.
5. Select materials and processes to satisfy specific design criteria.
6. Select a problem or product for improvement using the design methodology.

11.20 DEMONSTRATE A KNOWLEDGE OF MATERIALS AND PROCESSES--
The student will be able to:

1. Describe the physical and chemical properties of engineering materials in terms of their structure.
2. List the causes of failure in materials and give procedures to prevent such failure.
3. Experiment with processes used with metal, woods, polymers, composite materials and adhesives.

11.21 USE TOOLS, MACHINES, CALCULATORS, AND COMPUTERS NECESSARY FOR OBTAINING SOLUTIONS TO DESIGN PROBLEMS--
The student will be able to:

1. Demonstrate the use of various graphs to categorize and display data.
2. Make decisions using graphical data presentations.
3. Demonstrate the use of a nomograph in solving equations.
4. Use a numerical calculator to solve complex equations either by direct solution or iteration (trial and error).
5. Use a computer and applications software to solve a design problem by simulation.
6. Demonstrate graphical vector analysis.

11.22 DESCRIBE THE FUNCTIONAL CHARACTERISTICS OF THE ENGINEERING DESIGN TEAM--
The student will be able to:

1. Describe work breakdown organization.
2. Describe work group organization schemes including functional and hierarchical schemes.
3. Describe the function of management in general and project management in particular.
4. Describe a typical design project team structure.
5. Outline a research methodology.
6. Describe brain-storming.

11.23 CONDUCT A RESEARCH, EXPERIMENTATION OR DESIGN PROJECT RELATED TO ENGINEERING TECHNOLOGY--
The student will be able to:

1. Choose appropriate research materials such as professional journals, magazines, reference books, CD-ROM, or Internet databases to determine a unique research topic.
2. Gather and evaluate research data with regard to the design of a technology-related project.
3. Synthesize research data into an experiment plan.
4. Conduct an experiment related to the technology topic.

11.24 CONTACT AND INTERVIEW AN EXPERT IN THE FIELD RELATED TO THE CHOSEN TECHNOLOGY TOPIC--
The student will be able to:

1. Locate and interview experts in the field of research using sources such as the Thomas Register, local business and industry, advisory committee members.
2. Conduct an Internet search to find an expert in the field of study.
3. Invite local experts to present to the class

11.25 UTILIZE CURRENT TECHNOLOGY TO ACCESS INFORMATION RELATED TO THE CHOSEN TECHNOLOGY TOPIC--
The student will be able to:

1. Utilize CD-ROM, laser disk, telecommunication, or other sources to research technology-related topics.
2. Contact and interview university-level experts in the field of research.

11.26 MODEL AN IDEA USING APPROPRIATE COMPUTER SIMULATION SOFTWARE OR SCALE MODELING TECHNIQUES--
The student will be able to:

1. Identify a technology-related problem.
2. Research the problem using print and electronic search methods.
3. Analyze and evaluate the research data.
4. Synthesize the research data and apply it to the problem.
5. Design and conduct a test or experiment related to the problem.
6. Evaluate the results of the experiment.
7. Reformulate and re-try the experiment based on evaluation.
8. Produce a multimedia presentation about the technology topic.
9. Use appropriate model making techniques and materials to make a working model of the technology topic.
10. Simulate the research topic using computer animation or simulation software.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Principles of Technology I

IDAHO CODE NUMBER: TE 1971

12.01 Demonstrate principles and applications of force in mechanical, fluid, electrical and thermal systems.

12.02 Demonstrate solutions to work problems and principles related to mechanical, electrical and fluid devices.

12.03 Calculate the work rate of electrical, mechanical and fluid systems.

12.04 Demonstrate the positive and negative affects of resistance related to mechanical, thermal, fluid and air systems.

12.05 Demonstrate the concept of energy related to mechanical, electrical, fluid, and thermal systems.

12.06 Calculate the results of power related to mechanical, thermal, fluid, air and electrical systems.

12.07 Demonstrate solutions to the principles of transformers as applied to mechanical, fluid, and electrical systems.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Principles of Technology I

IDAHO CODE NUMBER: TE 1971

12.01 DEMONSTRATE PRINCIPLES AND APPLICATIONS OF FORCE IN MECHANICAL, FLUID, ELECTRICAL AND THERMAL SYSTEMS--
The student will be able to:

1. Apply principles of force in mechanical systems.
2. Demonstrate the principles of pressure in fluid systems.
3. Demonstrate the principle of voltage in electrical systems.
4. Apply temperature principles in thermal systems.

12.02 DEMONSTRATE SOLUTIONS TO WORK PROBLEMS AND PRINCIPLES RELATED TO MECHANICAL, ELECTRICAL AND FLUID DEVICES--
The student will be able to:

1. Solve work problems in mechanical systems.
2. Demonstrate the application of work done by a winch
3. Apply the principles of work done in fluid systems.
4. Apply math skills needed to calculate work done in mechanical fluid systems.
5. Demonstrate through application the work done by a piston.
6. Calculate the work done by a water pump.
7. Solve problems relating to work done in electrical systems.
8. Determine the work done by motors and solenoids.

12.03 CALCULATE THE WORK RATE OF ELECTRICAL, MECHANICAL AND FLUID SYSTEMS-

The student will be able to:

1. Measure rate in mechanical systems.
2. Measure rates on conveyor belts.
3. Measure angular rate with a stroboscope.
4. Demonstrate the applied principles of rate in fluid systems.
5. Measure liquid-flow rate in a channel.
6. Measure gas-flow rates with an orifice.
7. Demonstrate the principle of rate in electrical systems.
8. Demonstrate the principles of rate in thermal systems.
9. Demonstrate proper use of term couple devices in measuring heat-flow rate.

12.04 DEMONSTRATE THE POSITIVE AND NEGATIVE AFFECTS OF RESISTANCE RELATED TO MECHANICAL, THERMAL, FLUID AND AIR SYSTEMS--
The student will be able to:

1. Apply principles of resistance in mechanical systems.
2. Demonstrate the principles of friction.
3. Apply the basic principles of resistance in fluid and air systems.
4. Apply basic electronic principles to solve resistance problems in electrical systems.
5. Apply the principles of resistance in thermal systems.

12.05 DEMONSTRATE THE CONCEPT OF ENERGY RELATED TO MECHANICAL, ELECTRICAL, FLUID, AND THERMAL SYSTEMS--
The student will be able to:

1. Apply energy principles in a mechanical system.
2. Demonstrate the principles of energy in mechanical and fluid systems.
3. Apply energy concepts in basic electrical systems.
4. Demonstrate the principles of energy in thermal systems.

12.06 CALCULATE THE RESULTS OF POWER RELATED TO MECHANICAL, THERMAL, FLUID, AIR AND ELECTRICAL SYSTEMS--
The student will be able to:

1. Apply principles of power in mechanical system.
2. Measure power in linear and rotational mechanical systems.
3. Demonstrate the principles of power in fluid/air systems.
4. Apply the principle of power in electrical systems.
5. Relate power formulas in thermal systems.

12.07 DEMONSTRATE SOLUTIONS TO THE PRINCIPLES OF TRANSFORMERS AS APPLIED TO MECHANICAL, FLUID, AND ELECTRICAL SYSTEMS--
The student will be able to:

1. Solve linear transformer problems in mechanical systems.
2. Demonstrate the principle of transformers in rotational mechanical systems.
3. Apply the principle of transformers in fluid systems.
4. Determine the results of transformers in electrical systems.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Principles of Technology II

IDAHO CODE NUMBER: TE 1972

13.01 Demonstrate principles and applications of momentum in mechanical, fluid, electrical and thermal systems.

13.02 Demonstrate solutions to waves and vibration problems and principles related to mechanical, electrical and fluid devices.

13.03 Demonstrate the use of energy converters related to electrical, mechanical, and fluid power systems.

13.04 Demonstrate the use of transducers related to mechanical, thermal, fluid and air systems.

13.05 Demonstrate the concept of radiation related to mechanical, thermal, fluid, air and electrical systems.

13.06 Demonstrate principles of optical systems related to mechanical, thermal, fluid, air and electrical systems.

13.07 Demonstrate solutions to time constants as applied to mechanical, fluid, and electrical systems.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Principles of Technology II

IDAHO CODE NUMBER: TE 1972

13.01 DEMONSTRATE PRINCIPLES AND APPLICATIONS OF MOMENTUM IN MECHANICAL, FLUID, ELECTRICAL AND THERMAL SYSTEMS--
The student will be able to:

1. Demonstrate linear momentum and list its variables.
2. Demonstrate angular momentum and list its variables.
3. Demonstrate impulse and list its variables.
4. State the law of conservation of momentum as it affects linear or angular motion.
5. Apply the relationship of impulse to change in momentum.
6. List examples of how momentum affects mechanical and fluid systems.

13.02 DEMONSTRATE SOLUTIONS TO WAVES AND VIBRATION PROBLEMS AND PRINCIPLES RELATED TO MECHANICAL, ELECTRICAL AND FLUID DEVICES--
The student will be able to:

1. Demonstrate wave motion in general.
2. Demonstrate how waves transmit (move) energy.
3. List the characteristics that are used to describe a wave.
4. Distinguish between longitudinal and transverse waves.
5. Identify workplace applications where waves and vibrations are found.

13.03 DEMONSTRATE THE USE OF ENERGY CONVERTER RELATED TO ELECTRICAL, MECHANICAL, AND FLUID POWER SYSTEMS--
The student will be able to:

1. Demonstrate the purpose of an energy converter.
2. Identify converters that change mechanical energy to fluid or electrical energy.
3. Identify converters that change fluid energy to mechanical or thermal energy.
4. Identify converters that change electrical energy to mechanical or thermal energy.
5. Identify converters that change thermal to mechanical, fluid or electrical energy.
6. Apply by demonstration what is meant by the efficiency of an energy converter.

13.04 DEMONSTRATE THE USE OF TRANSDUCERS RELATED TO MECHANICAL, THERMAL, FLUID AND AIR SYSTEMS--
The student will be able to:

1. Define a transducer as a device that senses mechanical, fluid, electrical or thermal information.
2. Apply the action of a transducer.
3. Distinguish between an energy converter and a transducer.
4. Identify transducers that change mechanical signals into electrical signals.
5. Identify transducers that change fluid signals into mechanical or thermal information.
6. Identify transducers that change electrical signals into mechanical or thermal information.
7. Identify transducers that change thermal signals into mechanical, fluid or electrical information.

13.05 DEMONSTRATE THE CONCEPT OF RADIATION RELATED TO MECHANICAL, ELECTRICAL, FLUID, AIR AND THERMAL SYSTEM--
The student will be able to:

1. Define what is meant by "radiation."
2. Define what is meant by "electromagnetic" radiation.
3. Define what is meant by "nuclear" radiation.
4. Identify workplace applications where technicians measure or control radiation.

13.06 DEMONSTRATE PRINCIPLES OF OPTICAL SYSTEMS RELATED TO MECHANICAL, THERMAL, FLUID, AIR AND ELECTRICAL SYSTEMS--
The student will be able to:

1. Demonstrate how light can be represented by light rays.
2. Demonstrate how light can be represented by waves.
3. Identify the special characteristics of laser light.
4. List several optical systems that "process" light.
5. Identify workplace applications where technicians measure and control light.

13.07 DEMONSTRATE SOLUTION TO TIME CONSTANTS AS APPLIED TO MECHANICAL, FLUID, AND ELECTRICAL SYSTEMS--
The student will be able to:

1. List the distinguishing factors of uniform and non-uniform change.
2. Define a "time constant."
3. Identify systems where time constants are needed to describe system behavior.
4. Define three time constants.
5. Give examples of time constants in mechanical, fluid, electrical and thermal energy systems.
6. Identify workplace applications where technicians measure and control time constants.

Appendix